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ARTICLE XVII.

TRANSLATED by Master J. Owsdul, Markinton.

TO LICINIUS.

IF thou wouldst have thy life-bark glide
Safely along the stream of time,
Beware the rocks and chafing tide,
Avoid the ocean-path sublime.

The wise, Licinius, love to dwell
'Tween the extremes of high and base,
Nor hide them in the sordid cell,
Nor court the hall that riches grace.

They know what ills beset the proud,
That loftiest pines by winds are riv'n,
And the high mountain, capp'd with cloud,
First meets the thunderbolt of Heav'n.

Th' experienc'd mind misfortune fears,
While gales of pleasure seem to blow;
And when dread Sorrow's form appears,
Teaches the heart with hope to glow.

For 'tis the same almighty hand
Lets loose the winds and scattering hail,
Who gives the spring her magic wand,
To strew with choicest flow'rs the vale.

Not always wields the shaft of death
  The god of song, in ruthless ire,
But oft exalts his tuneful breath,
  And peaceful strikes the golden lyre.
Then vaunt not in the prosp'rous hour,
  Nor let stern Fate thine heart appal;
If Fortune smile, or dark'ning low'r,
  The same sad earth must cover all.

Attested by Mr. Proctor.

The TRANSLATION of this Ode by Master J. W. Hawkins, Renhold Vicarage, attested by the Rev. A. J. Crespin, entitles him to the SILVER MEDAL.

Very good TRANSLATIONS were received from

Master C. Metcalf, Wisbeach,
Attested by his Father.

Miss A. Kemp, Homerton,
Attested by Mrs. Batt.

Master J. Beldam, Merton Hall Academy, Cambridge.
Attested by Mr. Bosworth.

ARTICLE XVIII.

TRANSLATED by Master J. Owsdul, Markinton.

SIR, AND DEAR COUSIN,

IT is to you alone I address myself; it is from you alone I hope to find a refuge from misfortunes, too overwhelming for woman to bear. The Almighty has taken from me all that I held most dear upon earth, my beloved husband; you well know he was all the world to me. Eight days ago, he caused me to send for our son from school; when Maurice came to his bedside, he held out his hand to him, and having with difficulty given him his blessing, expired. With him have flown all my days of peace and happiness. I am plunged into the most desolate state that ever wife or mother felt. Yet if I had suffered alone! but my poor son weeps beside me. Alas! he knows not yet how sad a thing it is to be left without a father. It breaks my heart as he presses my hand, and looks up in my face, and pronounces his father's name, while the tears roll down his cheeks. No one but a mother can know such agony as this. Sometimes I fancy I can read in his countenance this piteous language: "Now, my dear mother, you alone are left to take care of me." Wherever I go, he follows me, and wipes the big drop from his eyes with my robe; when I would fain console him, my own sorrow prevents me, for it is he that occasions my grief. How shall I support him? my poor husband hath left me nothing, and my hands are too feeble for labour. Of whom then must I ask for aid, if not from your benevolence? My only hopes dwell with you—surely Heaven will dispose your heart to befriend a poor unhappy widow. Prove that the ties of blood which bind us are sacred. I will entrust my son to your care; all that you do for him, you will do for me, and for the memory of a man who loved you. What vigour and fortitude the Almighty has left me, I will exert to gain my own daily bread; but I am not in a condition to bring up my son properly. It will be a cruel sight when he parts from me, but I know how to yield to the dictates of necessity. Still there is one reflection that consoles me, I trust to the grace of a merciful God, and in the goodness of a benevolent friend. Be to my poor boy in the place of a father, and so forward his prospects in life, that he may one day contribute to soften the severity of my affliction. I cannot proceed—my tears, that moisten the paper, will sufficiently explain the feelings of my heart. In your hands rest my peace of mind, and the welfare of my son. The Almighty will for ever bless you for your bounty. He will reward you even in this world, for all that you may do in behalf of your two unhappy relatives. I remain, in the deepest and most inconsolable sorrow, &c.

Attested by Mr. Proctor. CECILIA LAFORET.

ARTICLE XVIII.

TRANSLATION from the French, by Master C. Metcalf, Wisbeach, who is requested to send for the SILVER MEDAL.

DEAR COUSIN,

IT is to you alone that I address myself; it is from you that I hope to receive assistance in misfortunes too distressing for a female. God has snatched from me the treasure which I esteemed most dear on earth, my worthy husband. You know that all my affections were centred in him; eight days have elapsed, since he ordered me to recal our son from college; when Maurice approached his bed, he stretched out his hand to him, and had no sooner pronounced his blessing than he expired. With him are fled my days of tranquillity and happiness. Behold me plunged into the most afflicting condition that a wife and mother can experience. Yet if I suffered alone!—but at my side my poor son continually laments his loss. He is yet ignorant to how many misfortunes a young orphan is exposed. It breaks my heart when he clasps my hands, and, looking at me with tears in his eyes, pronounces the name of his father. None but a mother can form the least idea of these afflictions. At another time, I think I read these sad words in his countenance: "Now, my mother, it is your duty alone to support me." Wherever I go, he attends me, and is continually wiping from his eyes the tears which the sight of my mourning attire causes him to shed. When I would endeavour to console him, sorrow stops my utterance; for it is he who is the chief cause of all my grief. How shall I maintain him? my poor husband has left me nothing, and my hands are too feeble to endure labour. From whom then, if not from you, shall I seek assistance? It is on you alone that my hopes rely. The Almighty doubtless will dispose your heart to give relief to a poor unfortunate widow. Show that the ties of relationship by which we are united, are sacred. I resign my son to your care; whatever you shall do for him, you will do for me also, and for the memory of a man who had a great regard for you. I will employ whatever strength and spirits God has left me, to gain my livelihood by labour; but it is not in my power to educate my son in a suitable manner. I deliver him up entirely to you. It will be hard to part with him, but I can obey the mandates of necessity. At the same time, the thought of trusting him to the protection of an all-kind Providence, and to the goodness of a generous relation, affords me comfort. Be unto him a father, and place him in a situation, in which he may one day mitigate my misfortunes. I can

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say no more; my tears, which moisten this paper, bear sufficient testimony of the feelings of my heart. In your hands are placed my repose, and the happiness of my son. God will for ever bless your generosity. He will recompense you, even in this world, for the kindness you shall have conferred on two unfortunate relations. Impressed with the most profound grief of an unfortunate widow,

I am,

Attested by his Father. CECILIA LAFORET.

ARTICLE XVIII.

TRANSLATED by Miss Agnes Docker, aged 11 years on the 21st December, 1811.

MY DEAR COUSIN,

IT is to you only that I address myself; and it is from you that I hope to find succour from misfortunes too severe for a woman. God has taken from me all that I held most dear upon earth, my worthy husband. You know he was all to me. It is eight days since he desired me to send for our son from college; when Mauriçe came near his bed, he took hold of his hand, and had scarcely given him his blessing when he died. With him have for ever fled my days of happiness and repose. Behold me plunged into the most desolate state for a woman and a mother. Yet if I suffered alone!—but close by me my poor son sighs. He does not yet know how unfortunate a poor orphan is. He breaks my heart; while looking at me he presses my hands, and, shedding tears, pronounces his father's name. There is none but a mother can form an idea of these pains. I think I read in his face these sorrowful words: "Now, my dear mamma, it is you only that can support me." Wherever I go he is always with me, and he wipes his eyes, full of tears, on my gown. When I wish to console him, my grief stops me, as it is he who causes my greatest sorrow. How shall I nourish him? My poor husband left me nothing, and my hands are too weak to work. From whom then shall I seek help if it is not from you? It is in you alone that I repose my hope. God without doubt will dispose your heart to help a poor unhappy widow. Show that the bonds of kindred which unite us are sacred. I resign my son to you; all that you do for him you do for me, and for the memory of a man who loved you. What strength and courage God has left me I will employ to gain my livelihood by working; but to raise my son to a respectable condition is not in my power. I resign my son to you entirely. It will be cruel for me to see him go out of my own hands, but I must yield to necessity. However, a thought consoles me; it is that I entrust him to the goodness of a beneficent Creator, and to the bounty of a generous relation. Be to him what his father was, and put him in such a situation as to be able one day to lessen my grief. I cannot say any more—my tears, which blot this leaf, show you sufficiently what my heart feels. You hold in your hand my comfort, and my son's happiness. God will always bless you for your generosity. He will recompense you, even in this world, for what you shall have done for two unfortunate relations. I am, with the most profound grief, the unfortunate

CECILIA LAFORET.

Attested by Mr. Joseph Perry, Paragon, Paradise Fields, Hackney.

Other good TRANSLATIONS were sent by

Master Joseph Catlow, aged 13 years 10 months, Attercliffe.
Attested by Mr. Fieldsend.

Miss E. Sutcliffe, aged 14 years 9 months,
Attested by Mr. W. Sutcliffe, her uncle.

Master H. Leach, aged 13¼, Wisbeach,
Attested by his mother, Mrs. A. Leach.

Miss M. A. Aldersey, aged 14¼, Homerton,
Attested by Mrs. Batt.

Miss Mary Greaves, aged 14, Hackney,
Attested by Mrs. Batt, governess, Wertemberg-house Academy.

Master J. W. Hawkins, aged 15, Renhold Vicarage,
Attested by the Rev. A. I. Crespin.

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Master R. Daking, aged 13½, Bocking Academy,
Attested by M. Danep, French Master.

Master H. Atkin, aged 13, Academy, Sheffield,
Attested by Mr. Abraham, Master.

ARTICLE XIX.

THEME I. "ON HOPE," by Master Arthur Bromiley, Merton Hall Academy, Cambridge, aged 13 years, who is requested to send for the PRIZE MEDAL.

"THERE is in the mind of man a strong disposition to search into futurity. Unsatisfied with present possession, we are continually pressing on the uncertain future, for some fancied bliss. Thus, our lives glide away rather in a continued series of hopes, than of real enjoyments. The pleasing expectation of some future good attends us in every circumstance of life, and though our hopes are but seldom realized, 'yet it is necessary to hope, though hope should always be deluded; for hope itself is happiness, and its frustrations, however frequent, are yet less dreadful than its extinction.'

"The effects of hope on the human frame, are the most salutary and delightful. Hope is the great spring of action, and the chief source of pleasure and comfort. It is this that animates the labourer in his daily toil; inspires him with fresh vigour, when fainting with fatigue, and with renewed courage when depressed by unexpected difficulties. It is hope which encourages the husbandman to go and scatter abroad his 'precious seed,' while she fondly whispers that he shall ere long 'come again with rejoicing, bearing his sheaves with him:' that he shall 'reap if he faint not.' And thus, in every situation in life, hope forms the animating principle of all our actions. Like the sun, wherever it shoots its rays it conveys life and vigour to the soul. Without hope, we should be, as it were, 'dead while we live;' unable to enjoy the common bounties of nature, or to suffer with patience the calamities to which we are exposed. But hope bears us up under the most distressful circumstances. When the storms of adver-

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sity beat full upon us, hope, as an 'anchor of the soul,' calms its troubled motions, and keeps us from sinking in despair. But there is a hope, far superior to the hope of the world; more sublime and pure in its object, and more animating and delightful in its nature—a 'hope full of immortality.' And this is the hope of every true christian. It is not like the hopes of the worldling, liable to disappointment, and at best but partial in their fulfilment; but being founded on the unalterable promises of God, it shall never be frustrated; nor will the most elevated hopes of the christian be found at last to have been too sanguine: for the eye of faith, however clear, is unable to conceive of the glories which are then to be revealed. Let us, then, fix our supreme hopes on heavenly objects; this will afford us the most solid enjoyment in life; it will be our solace in affliction, and in the hour of death it will support our sinking souls, and light us through that darksome 'passage, to the skies'."

Attested by Mr. N. Bosworth.

Theme II. "On Hope," by Master J. Catlow, Attercliffe.

"When we consider the accumulated miseries of human life, in a detached view, we are apt to arraign Divine Providence; but when we remember that there are principles implanted in the mind of man by which he is enabled to sustain them, our murmurs cease—Hope was certainly intended by the all-wise Disposer of our being, as an antidote against despair; an alleviation of grief, and a stimulus to perseverance. Depressed by calamity, harassed by misfortunes on every side, and amidst objects pregnant with sorrow, what would be the resource of man if nothing interposed to disarm the poignant sting of misery? The christian, with a noble superiority over the things of time and sense, looks forward to another and a better world; when persecuted and reviled by the wicked, he despises their malice, and anticipates the time when all his enemies will be abashed. If amidst the troubles of this transitory scene we had no prospect to an amendment of our state, to what could we have recourse? Should we sit down in dejection of mind? Should we let despair, like a vulture, prey upon the heart? Should we relinquish our projects because they are foiled?, Undoubtedly this would be the case. But man was not designed for inactivity; his faculties must have employment, his soul cannot be absorbed in eternal sleep. What then are the springs to action? Shall he form plans without hopes of executing them? Shall he machinate and invent without views of the usefulness or profitableness of his schemes? impossible; his whole frame cries against it; all nature, as well as revelation, with a united voice, declares, that man must live by hope; this is the only sweet ingredient in the bitter cup, to make the nauseous draught potable; this remained at the bottom of Pandora's box, when all the pestilential contents were escaped. Perseverance is, without doubt, a virtue highly worthy of cultivation in society. Innumerable are the schemes and contrivances that, without the aid of this virtue, would have fallen to the ground untried; but that by the assistance of this intrepid principle, have risen with amazing success, and become useful to the world. But where is the utility of perseverance uncombined with hope? Would it not savour of madness, if a man was to persist in an undertaking while he knows it is impossible to succeed? If we deny this, we immediately plant in the human breast a principle, leading us of our own accord to destruction, which, it must be presumed, was never done by nature. Patience is described, by the writers of the New Testament, as a Godlike virtue, and highly requisite in the Christian. Under the influence of this, our Saviour bore the cross and all his troubles in the world with amazing resignation; he submitted himself to the divine will, whatever it might be. But the idea of continual affliction is insufferable; the wretches devoted to it, recoil with horror at the thought; these are the unhappy inhabitants of hell, who have received their miserable boon as the reward of disobedience. Was not their reflection absorbed in contriving destruction for man, despair would overwhelm them. Our Saviour himself would, no doubt, have sunk under the thought of eternal sorrow: when on the cross, he looked forward for his father's smile; the approbation of the holy angels; to a time when death shall be conquered, and his people redeemed. Seeing then that hope is so highly necessary as a support under afflictions, we should endeavour to cherish it. Let us call to mind what others have done, whose acts are recorded on the page of history; let us remember the eloquence of Demosthenes, who laboured under the greatest discouragements from nature; the sublime conceptions of Ferguson and Emerson, who were oppressed by poverty, and the last of whom was carped at by snarling critics like Zoilus. Hope tells us to emulate even these luminaries. Thus we see the extensive use of this passion, and for what noble purposes it was first implanted in our breasts.

Attested by Mr. Fieldsend.

THEME III. "ON HOPE." By Miss A. Kemp. Homerton.

It is very wisely ordered by Providence that the future is unknown to us; as our uncertainty with respect to what will happen, incites us to the practice of virtue, and permits us to indulge ourselves with hope. Hope may be defined to be, the expectation and desire that some good may be obtained or some evil averted. It proceeds principally from our ignorance of the future, and our natural eagerness to be happy. It is so powerful a sentiment of the human breast, that we place our felicity not so much in our present pleasures, as in the prospect of those we may hereafter enjoy, and likewise our happiness consists more in the anticipation, than in the actual possession of the blessings for which we sigh. Hope is born with every man, and is his greatest friend in all the circumstances of his life; in the sorrows of adversity, and even on the bed of death, it is seldom found to forsake him. Though deprived of that enjoyment, on which he placed the most value, he supplies its deficiency by promising himself a greater, and if experience does not realize this imaginary pleasure, hope quickly assures him of another: thus, he con stantly gains a fresh prospect of happiness, as a substitute for that which he has lost. There are certainly some situations whence hope is banished, but in general it is indulged where there appears to be the least ground. If the evils they apprehend seem at all doubtful, or if there can be the smallest possibility of averting them, men gladly suppose that they will never happen. Perhaps there cannot be a greater instance given of this, than that which too frequently occurs;—the case of criminals, who, though condemned and even brought to the scaffold, delude themselves with the hope of a reprieve; depending anxiously on the event of so small an uncertainty.

"The pleasing expectation of some good prompts us to attempt obtaining it: for, were we convinced that notwithstanding our endeavours to avoid them, we must necessarily be attended by misfortunes, we should take no measures to prevent what we know to be inevitable. We derive a great advantage from hope in this incitement to exertion, but perhaps from the same cause a similar evil proceeds. Relying too much on what is to come, tempts us to be regardless of the present, and neglectful of the duties imposed on us: for whoever imagines that his wishes will certainly be accomplished, will think it of no consequence whether he owes his success to his own industry."

Attested by Mrs. Batt.

Other good THEMES were sent by

Master Beldam, Merton Hall Academy, Cambridge,
Attested by Mr. N. Bosworth.

Master H. Atkin, aged 13, Sheffield,
Attested by Mr. Abraham.

Miss M. A. Aldersey, aged 14¼, Homerton,
Attested by Mrs. Batt.

Master W. Tucker, aged 14, Sheffield,
Attested by Mr. Abraham.

ARTICLE XX.

VERSES by Master J. Owsdul, Markinton, who is requested to send for the PRIZE MEDAL, or for books to the amount of half a guinea.

THE sun was sinking to the vale of night,
And ting'd with faintest ray Busaco's height;
The din of arms, the battle's fearful roar,
No longer echo'd through Iberia's shore,
And Silence pensive stood, with sable train,
To list the dying groan, and weep the slain:
Then from the bloody ground, with arms o'erspread,
A wounded soldier feebly rais'd his head;
Within his breast a mortal stab he bore,
And life was ebbing with the crimson gore;
Firm had he stood upon the rocky height,
Fearless had met the horrors of the fight,
And, 'gainst a tyrant's arm and iron laws,
He fell, supporting freedom's sacred cause.
But now a glance upon the neighbouring dead
He mournful threw, and, sighing, faintly said—
" Farewell thou cheerful orb, again to rise,
But ne'er again to gladden these sad eyes!
Farewell, my comrades, may your peace-crown'd sails
Soon spread in triumph for dear England's vales!
My children!—wife!"——but here his falt'ring breath
For ever fled!—the hero sunk in death.
  And may the turf, with sweetest violets dress'd,
Lightly repose upon his honour'd breast;
And though no pompous marble wrap the clay,
Freedom shall often come, at break of day,
To pay his vows; the goddess Liberty,
Around his urn a laurel wreath shall tie;
And Memory, drooping o'er his hallow'd grave,
Sighing shall oft repeat, " here sleeps the brave."

Attested by Mr. Proctor.

ARTICLE XXI.

VERSES by Master J. Smith, Renhold Vicarage, near Bedford.

CHRISTMAS DAY.

WELCOME the morning of this day!
This day our Saviour came;
He came his people to redeem,
And sinners to reclaim.

Nor in a palace was he born,
Nor in a stately bed;
Christ, our salvation, had not where
To lay his sacred head.

Yet though of humble parents born,
And gentle as a lamb,
He is the whole creation's Lord,
He is the great "I AM."

He came (Oh, bless the Saviour's name!)
The vile, the lost to save:
He died, and triumph'd over death,
O'er Satan and the grave.

First to the Jews he offer'd life,
But they his laws refus'd;
They trod his gospel under foot,
And then his name abus'd.

Bow to the sceptre of his grace,
His words and orders keep;
For he th' anointed Saviour is
Of Gentile, Jew, and Greek.

All laud and praise to him be giv'n
Who now doth reign on high;
For he is still the sinner's friend
Who did for sinners die.

Attested by the Rev. A. J. Crespin, Renhold Vicarage, near Bedford.

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ARTICLE XXII.

By Master J. Catlow, Attercliffe.

ODE TO SOLITUDE.

Oh, nymph sublime! reflection's greatest friend,
To thee I beg an earnest prayer to send;
Confusion's sons in riot spend their life,
Teach me to shun the busy noise of strife;
In courts while others all their time employ,
Oh! let me find a far superior joy;
Lead me to some sequester'd, lonely cell,
Where virgin Solitude in peace doth dwell;
Hard by where flows the pebbly, purling stream,
Apt to inspire a melancholy theme;
All Nature in her beauty jocund smiles,
My eyes enraptures, and my thoughts beguiles;
In contemplation let my soul be wrapt,
And all my pow'rs to calm reflection apt:
Then will I meditate on human life,
At distance view dread broils, and blood, and strife;
Nor vainly envy, in my humble state,
The pompous titles of the ruling great:
While youth, and strength, and fortune hold command,
These tyrants rule with nervous iron hand;
But when rude time has mark'd them for his prey,
They all shall fall, the pow'rful and the gay:
Nor can their noble race and far-spread fame,
Conjoin'd, invalidate the tyrant's claim:
Fear through the mansion stalks with monstrous howl,
And ghastly Death with terror frights the soul;
The voice of flatt'ry loses then its charms;
The tyrant grim appears in dreadful arms.
In the lone grot be my delight to dwell,
And to the wind my sorrows, joys, to tell;
Remote from cities and their cursed cares,
Be mine to shun the world's deceitful snares;
To listen to the tale of gloomy caves;
To ponder o'er the abbey's silent graves:
Or if these dreary walks delight thee not,
But longing, seek'st a more enchanting spot,

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From hence, O spotless nymph! with lily hand
Conduct me safe to some more genial land;
To yonder fragrant amaranthine bow'r,
Where Nature shines in ev'ry painted flow'r;
In sight of which, the lambkins sport and play,
And all creation hails the rising day;
Such as Parnassus, by the poets fam'd,
For solitude and true devotion fram'd:
Here will I bask, in deep reflection lost,
Nor shall my mind with cares and fears be toss'd;
Here shall I think myself supremely great,
Freed from the troubles that attend on state:
The balmy wind, just rustling 'mong the trees,
Will lull me gently to recline at ease:
The murm'ring rill, which laves its pebbly course,
The clear smooth stream meand'ring from its source,
The waving grass, the softly-whistling breeze,
With fancy's dreams my tranquil mind will please:
The twitt'ring songsters of the verdant grove,
Will make my mind in love's sweet sallies rove;
While at the echo of my tuneful lyre,
My ardent soul shall glow with martial fire.—
Amid this solitary pleasing scene,
From brute creation morals let me glean;
Let all my thoughts to one great purpose tend,
From Nature's pleasing works, my heart to mend.—
So would I happy live, contented die,
No foe exulting, and no friend to sigh.

Attested by Mr. Fieldsend.

ARTICLE XXIII.

Verses by Master P. Thompson, aged 13¾ years,
Renhold Vicarage.

THE LOST TRAVELLER.

Cold blew the blast across the moor,
His way the trav'ler lost,
Nor could he find one cottage door
To shield him from the frost.

His friendly home he was not near,
He knew not where to lie,
His mind was fill'd with dread and fear
Lest he with cold should die.

He hasten'd on with trembling pace,
When lo! a light he spies;
Then pleasure shone upon his face,
And sparkled from his eyes.

He knock'd when at the cot arriv'd,
A voice cried out "who's there?"
"A trav'ler cold," he then replied,
"This night would fain rest here.

"The night is dark, my way I've lost,
The wind is piercing cold,
My body's bitten by the frost,
And I am faint and old.

"Oh! shelter me this dreadful night,
My home is far away,
Depart I will by morning light,
So let me in, I pray."

The peasant op'd his cottage door,
The trav'ler's wants supplied,
He gave him of his little store,
And plac'd him by his side.

They talk'd beside the blazing hearth
Till night had pass'd away,
The trav'ler then resum'd his path
By dawning of the day.

Thy fellow-creatures if thou should'st
In want or mis'ry see,
Then do to others as thou would'st
Have others do to thee.

Attested by Rev. A. I. Crespin, Renhold Vicarage, near Bedford.

Other good copies of verses were sent by
Master J. H. Stephenson, Renhold Vicarage,
Attested by the Rev. A. I. Crespin.

Master Beldam,
Attested by Mr. Bosworth.

ARTICLE XXIV.

QUESTION 1.

Answered by Master *W. Balme,* Attercliffe.

The area of a right angled triangle, is equal to the rectangle of half the perimeter and its excess above the hypothenuse. Em. Geom. 37. 2. Hence $(35+25)\div 2=30$, and $30\times(30-25)=150$ ch.$=15$ acres.

Again, by Master *J. Bramall,* Holthead.

In every right angled triangle, the sum of the sides less the hypothenuse, is equal to the diameter of the inscribed circle, and the perimeter multiplied by the diameter of the inscribed circle, is equal to four times the area. Hence $35-25=10$, and $\frac{(35+25)\times 10}{4}=$ 150, the area required.

Again, by Masters *H. Atkin,* Sheffield, and *J. Macann,* Lutton.

From Bonnycastle's mensuration, prob. 3. cor. 3. we have $\frac{1}{2}p\times(\frac{1}{2}p-a)$, that is $\frac{25+35}{2}\times\left(\frac{60}{2}-25\right)=$ 150, the area required.

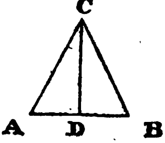
The same, by Master *S. Stead,* Farnley.

From the nature of right angled triangles, it is obvious that the triangle, whose area is required, is similar to one whose sides are 3, 4, and 5 respectively and area 6; therefore, by similar figures $5^2 : 6 :: 25^2 : 150$, the area required.

This question was answered also by Masters *S. Aydon; W. Harrison,* Burton Pidsea; *R. Chambers; W. Harrison; R. Fisher;* and *G. Pickering,* of Broughton; also *W. Thackwell.*

QUESTION 2.

Answered by Masters *S. Aydon,* Leeds; and *W. Balme.*



Let AB = one side of the polygon, C the centre, and let CD = radius; then the ∠ ACB = 5° or ACD=2° 30′ whose nat. tan. is .436609 = area of ACB to rad. 1. therefore, .436609 ×72=3.1435848 = the area of a 72 sided polygon, whose rad. is one; therefore, $3.1435848 \times 9^2 = 254.63036$, the area of a 72 sided polygon, whose radius is 9.

Answers were sent by Masters *Atkin*; *Bramall*; *W. Harrison*, Burton; *Chambers*; *Harrison*; *Fisher*; *Pickering*; *Macann*, and *Thackwell*.

QUESTION 3.

Answered by Masters *Aydon*, *Macann*, and *W. Harrison*, Burton.

Let $x =$ the number of oxen, then $\frac{156}{x} =$ price of one ox, and by the question $\frac{156}{x} - 6\frac{1}{2} = \frac{156}{x+2}$, or $6\frac{1}{2}x^2 + 13x = 312$, or $x^2 + 2x = 48$, or $x^2 + 2x + 1 = 49$, or $x + 1 = 7$, or $x = 6$, the number of oxen bought.

Again, by Master *W. Balme*.

Let $x =$ price of one ox, then $\frac{156}{x} =$ number bought, and by the nature of the question $\frac{156}{x - 6\frac{1}{2}} = \frac{156}{x} + 2$, which equation resolved, gives $x = 26$, therefore $\frac{156}{26} = 6$, the number bought.

Answers were sent by Masters *Atkins*, *Bramall*, *Chambers*, *Fisher*, *Harrison*, *Pickering*, and *Thackwell*.

QUESTION 4.

Answered by Master *S. Stead*, æt. 12, Farnley, Academy.

The solidity of a frustrum whose less base, slant height, and greater base, are 2, 5 and 8, is found to be 87.9648, and sim. solids being as the cubes of like dimensions; we have, $87.9648 : 2^3 :: 703.7184 : 64$, and $\sqrt[3]{64} = 4$ is the less base of the required frustrum. By the same method we find its slant height $= 10$, and its greater base $= 16$.

It would be needless to insert the answers by Masters *Aydon*, *Atkin*, *Balme*, *Bramall*, *Harrison*, (Burton), *Macann*, *Chambers*, *Fisher*, *Pickering*, *Thackwell*, and *Har-*

rison, (Broughton), as they are all very similar to the above.

Master *James Macann*, of Lutton, aged 13¼, is requested to send for the SILVER MEDAL.

PRIZE SUBJECTS

TO BE ANSWERED IN NO. VI.

ARTICLE I. VOL. II.

THE best translation of the following Ode, by gentlemen not 17 years old, will be entitled to a PRIZE.

HORATII CARM. LIB. II. ODE XVI.

AD GROSPHUM.

OTIUM divos rogat in patenti
Prensus Ægæo, simul atra nubes
Condidit Lunam, neque certa fulgent
Sidera nautis;
Otium bello furiosa Thrace,
Otium Medi pharetra decori,
Grosphe, non gemmis neque purpura venale nec auro.
Non enim gazæ neque consularis
Summovet lictor miseros tumultus
Mentis, et curas laqueta circum
Tecta volantes.
Vivitur parvo bene, cui paternum
Splendet in mensa tenui salinum;
Nec leves somnos timor aut cupido
Sordidus aufert.
Quid brevi fortes jaculamur ævo
Multa? quid terras alio calentes
Sole mutamus? patriæ quis exul
Se quoque fugit?
Scandit æratas vitiosa naves
Cura; nec turmas equitum relinquit,
Ocior cervis, et agente nimbos
Ocior Euro.

Lætus in præsens animus, quod ultra est,
Oderit curare, et amara lento
Temperet risu. Nihil est ab omni
    Parte beatum.
Abstulit clarum cita mors Achillem;
Longa Tithonum minuit senectus;
Et mihi forsan tibi quod negarit,
    Porriget Hora.
Te greges centum Siculæque circum
Mugiunt vaccæ; tibi tollit hinnitum
Apta quadrigis equa; te bis Afro
    Murice tinctæ
Vestiunt lanæ: mihi parva rura et
Spiritum Graiæ tenuem Camœnæ
Parca non mendax dedit, et malignum
    Spernere vulgus. *Gesner's Edition.*

ARTICLE II.

The best translation of the following piece, by young gentlemen not 14 years of age, will be entitled to a SILVER MEDAL.

Equidem efferor studio patres vestros quos colui et dilexi, videndi, neque vero eos solos convenire aveo quos ipse cognovi; sed illos etiam de quibus audivi, et legi, et ipse conscripsi: Quo quidem me proficiscentem haud sane quis facile retraxerit; neque tamquam Peliam recoxerit; et si quis deus mihi largiatur, ut ex hac ætate repueriscam, et in cunis vagiam, valde recusem: nec vero velim, quasi decurso spatio, ad carceres à calce revocari: quid enim habet vita commodi? quid non potius laboris? sed habeat sane; habet certe tamen aut satietatem, aut modum; non lubet enim mihi deplorare vitam, quod multi et ii docti sæpe fecerunt; neque me vixisse pœnitet, quoniam ita vixi, ut non frustra me natum existimem: et ex vita ita discedo, tamquam ex hospitio, non tamquam ex domo; commorandi enim natura diversorium nobis, non habitandi dedit. O præclarum diem, cum ad illud divinum animorum concilium cætumque proficiscar! cumque ex hac turba et colluvione discedam! proficiscar enim non ad eos solum viros, de quibus ante dixi: sed etiam ad Catonem meum, quo nemo vir melior natus est, nemo pietate præstantior cujus à me corpus crematum est: quod contra decuit ab illo meum; animus vero non me deserens, sed respectans, in ea profecto loca discessit, quo mihi ipsi cernebat esse veniendum: quem ego meum casum fortiter ferre visus sum: non quod æquo animo ferrem: sed me ipse consolabar, existimans non longinquum inter nos digressum et discessum fore. His mihi rebus, Scipio, id enim te cum Lælio admirari solere dixisti, levis est senectus, nec solum non molesta, sed etiam jucunda; quod si in hoc erro, quod animos hominum immortales esse credam, lubenter erro: nec mihi hunc errorem, quo delector, dum vivo, extorqueri volo; sin mortuus, ut quidam minuti philosophi censent, nihil sentiam, non vereor, ne hunc errorem meum mortui philosophi irrideant; quod si non sumus immortales futuri, tamen exstingui homini suo tempere optabile est. Nam habet natura, ut aliarum omnium rerum, sic vivendi modum. Senectus autem peractio ætatis est tamquam fabulæ: cujus defatigationem fugere debemus, præsertim adjuncta satietate.

Cicero de Senectute.

ARTICLE III.

The best translation of the following passage, from the sermons of Saurin, by any young lady or gentleman not 16 years old, will be entitled to a SILVER MEDAL.

Envisagez-la cette mort, par raport aux types qui l'ont figurée; par raport aux ombres qui l'ont tracée; par raport aux cérémonies qui l'ont représentée; par raport aux oracles qui l'ont prédite.

Envisagez-la cette mort, par raport aux foudres et aux carreaux qui ont été lancez sur la tête de J. C. Voyez cette ame accablée de tristesse; ce sang decoulant en terre; cette coupe d'amertume dont votre Sauveur est abreuvé; ecoutez ces insultes, ces calomnies, ces accusations, ces sentences d'iniquité: regardez ses pieds et ses mains clouez, ce corps qui n'est bien tôt qu'une playe, cette populace efrenée acharnée a sa croix et augmentant l'horreur de son supplice; allez

jusques dans le ciel meme voyez le Pére éternal versant sur la tête de son fils toutes les phioles de sa colére ; voyez l'enfer de concert avec le ciel, et le ciel avec la terre.

Envisagez-la cette mort par raport aux signes terribles qui l'ont accompagnée ; par raport à cette terre qui tremble à ce soleil qui s'obscurcit, a ces pierres qui se fendent, à ces sepulchres qui s'ouvrent, à ces morts qui retournent à la lumiére.

Ramassez tous ces traits, et dites-vous encore la mort de J. C. est tout cela. La mort de Jesus Christ est le corps des figures, l'original des types, la realité des ombres l'accomplissement des oracles. La mort de J. C. est le rendezvous général des fureurs du Tout-puissant où toutes les flêches de sa justice ont été lancées contre une seule personne et toutes les phioles de sa colére versées sur une seule tête. La mort de J. C. est ce grand évenement qui a obscurci le soleil, qui a ouvert les tombeaux, qui a fendu les pierres, qui a fait trémbler la terre, qui a bouleversé la nàture et les élemens. Vous regrettez le monde, Vous qui devez aller au ciel. Et qu'est ce que le ciel ? C'est le prix de cette mort. Celui qui n'a point épargné son fils, mais qui l'a livré pour nous à la mort, ne nous donnera-t-il pas toutes choses avec lui. Si le moyen est si grand, quelle doit être la fin ! Si les preparatifs sont si riches, quel sera l'evenement ! Si le combat est si rude, quelle sera la victoire ! Si le prix est si inestimable, quel, quel sera le bien acquis à ce prix !

Que regrettez vous ? Vous, regrettez-vous des palais, des sceptres et des couronnes. Vous regretter-vous une houlette que vous portez, une cabane qui vous loge. Vous regrettez-vous une societé, une societé dont les défauts, ou les perfection sont souvent pour vous une sourse égale de miséres. Ah ! phantôme de notre cupideté, paroitrez-vous encore à nos yeux, et tiendrez-vous bon encore contre ces biens réels que la mort de J. C. nous acquiert.

La mort n'a donc plus rien de redoutable pour le chretien. Dan le tombeau de J. C. sont dissipées toutes les frayeurs qui se trouvoient dan le tombeau de la nature. Dan le tombeau de la nature, je vois une sombre nuit, à travers laquelle je ne puis percer :

dan le tombeau de J. C. je vois la lumiére et la vie. Dans le tombeau de la nature, je vois les peines de mes crimes: dan le tombeau des J. C. je vois mes crimes expiez. Dans le tombeau de la nature, je vois la triste destination d'Adam et de sa malheureuse postérité—*tu est poudre et tu retourneras en poudre*: dan le tombeau de J. C. j'eclate en actions de graces. Où est, ô mort, ta victoire? Où est, ô sépulchre, ton aiguillon? Graces à Dieu qui nous a donné la victoire par J. C. notre Seigneur.

ARTICLE IV.

THE best ESSAY on *Superstition*, by young ladies or gentlemen not 16 years old, will be entitled to a SILVER MEDAL.

ARTICLE V.

THE best copy of verses, in English, *on any subject*, by young ladies or gentlemen not 16 years old, will be entitled to a SILVER MEDAL.

ARTICLE VI.

THE best solutions to the following questions, by any young lady or gentleman not 16 years old, will be entitled to a SILVER MEDAL.

QUESTION 1. By Master R. Fisher, Broughton.

It is required to determine the transverse and conjugate diameters of an ellipse; so that if the transverse had been two chains more, the area would have been increased by four acres; but if the conjugate had been increased by two chains, the area would have been increased five acres.

QUESTION 2. By Master H. Atkin, Sheffield.

In an isosceles triangle two circles are inscribed touching each other and the sides of the triangle; the diameters of the circles are 8 and 12; required the sides of the triangle.

Question 3. By Master W. Balme, Attercliffe.

If the diameter and altitude of the segment of a globe be in the ratio of 3 to 1, and the solid content or capacity, fourteen ale gallons; required the diameter of the globe of which it is a segment.

Question 4. By Master W. Harrison, Burton Pidsea.

Given the perimeter of an isosceles triangle equal 28, and its area = 37.14655 chains to determine the sides, base, and radius of its inscribed circle.

ARTICLE VII.

"Eheu! fugaces," &c. Translated by Master J. Owsdul, Markinton, Yorks.

Alas, my friend, I view with tears
The swift, unceasing, lapse of years,
That steal our joys away:
Not all the balm of holy breath,
The blast of age, the stride of death,
One moment can delay.

In vain with flow'rs the votive urn
We deck, and sacrifices burn,
To bribe hell's potent lord:
The king who rules his proud domains,
Princes and beggars, lords and swains,
Must pass the Stygian ford.

What though we 'scape the dang'rous war,
The fearful storm, and ocean's roar
At distance we defy:
And heedful of life's rapid waste,
Cautious we shun the southern blast,
And each tempestuous sky;

Yet must we pass that sullen wave,
Whose waters hell's dominions lave,
And visit Pluto's throne;
Where stands remorse with threat'ning dart,
Th' insatiate vulture gnaws the heart;
Still rolls the restless stone.

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Thy cot be left, each joy of life,
Thy cherub offspring, lovely wife;
And o'er thy timeless grave,
Of all the groves thy hand hath sown,
The hated cypress tree alone
Her fun'ral boughs shall wave.

Thy hall adorn'd with nice design
Shall be thy heir's—thy well-stor'd wine
Shall tinge the marble floor;
And mid the sound of harmony,
Amid the shouts of revelry,
Thy name be heard no more.

ON THEMES.

The following rules for writing English Themes, selected from Walker's little work on that subject, are respectfully offered to the attention of our juvenile friends. A *Theme* is the proving of some truth. After the theme or truth is laid down, the proof consists of the following parts:

1. The PROPOSITION, or *narrative;* where we show the meaning of the theme, by amplifying, paraphrasing, or explaining it more at large.

2. The REASON; where we prove the truth of the *Theme,* by some reason or argument.

3. The CONFIRMATION; where we show the unreasonableness of the contrary opinion; or, if we cannot do that, we try to bring some other reason in support of the former.

4. The SIMILE; where we bring in something in nature or art similar to what is affirmed in our *Theme,* for illustrating the truth of it.

5. The EXAMPLE; where we bring instances from history to corroborate the truth of our *Theme.*

6. The TESTIMONY, or *quotation;* where we bring in proverbial sentences, or passages from good authors, which show that others think as we do.

7. The CONCLUSION; where we sum up the whole, and show the practical use of the *Theme,* by concluding with some pertinent observations.

Miscellaneous Correspondence, &c.

A SURVEY OF ROMAN ANTIQUITIES

IN THE

COUNTY OF LINCOLN.

(*Continued from vol.* i. *p.* 236.)

To this most ancient part of the city the Romans made an addition southward upon the declivity of the hill. "Below Class Gate a great part of the old Roman wall is left, made of stones piled sideways, first with one direction, then with another, as was a common method with them: one piece of it is now eighty feet long, eighteen high; a little bit of it lower down is twelve feet long, and as many high: between that gate, upwards, and the old city-wall, by the Greestone stairs[*], is the old ditch to be seen, much talked of, but not understood; it is called Were-dyke. The people have a notion that the river came up here, and that these stairs were a landing-place from the water-side, and denominated from I know not what Grecian traders[†]."

Two more great additions were made to this city, the first northward above the hill called Newport, or the new city, probably in the time of the Saxons, and the latter by the Normans, who made a new cut called Sinsil Dyke, on the south and east side, for its further security.

"In this last part of the city, on both sides the Roman road, were many funeral monuments of the old Romans; some of which they now dig up, and, doubtless, many more, when they first built upon this ground.

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[*] "The meaning of *Grecian stairs* I suppose borrowed from the Normans, importing only *stone steps (grees)* as they appear at this day, a commodious descent from the Minster Yard." Stukely's Itinerarium, vol. i. page 1.

[†] Stukely's Itinerarium Curiosum, vol. i. page 90.

Immense are the Roman antiquities dug up about this famous colony: nor has the perpetual turning up the ground exhausted them*." They chiefly consist of hypocausts or stoves, sudatories or sweating baths, sepulchres, inscriptions, pavements, coins, and aqueducts or pipes for supplying the city with water. These we shall give a concise account of, in a future part of this work.

"This then was the state of this city in Roman times: the Foss and Ermine-street entered the city at Stanbow, or the stony arch; there they parted; the Ermine-street went directly up the hill, and so full north through Newport; the Foss, according to its natural direction, ascended it obliquely on the eastern side without the ancient city, and so proceeded to the sea-coasts north-east†."

About a mile east from the cathedral numerous sepulchral remains have been discovered; the greatest number were found in making the stone quarries. Here appears to have been a considerable burial-ground, and from the fragments of urns, &c. we may conclude it to have been the family cementry of some person of note; perhaps the commandant.

Numerous sepulchres, generally supposed Roman, have been found in the vicinity of the city, but seldom the remains of more than one human being have been found therein.

"Lindum-colonia‡ seems to have been the focus where all armies of the Romans, east of Trent, might be concentrated, as occasion served. Ad Pontem answered the same purpose west of Trent. Communications with these two stations ran in almost all direc-

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* Stukely's Itinerarium Curiosum, vol. i. page 91.

† Ibid. page 90.

‡ "Towns of this class were occupied by Romans, and mostly by legionary soldiers, who received portions of land in the neighbourhood, as a reward for their services, and as an encouragement to be vigilant in suppressing any attempts of the natives to recover their liberty. Their constitution, their courts of justice, and all their offices, were copied from Rome; and the inhabitants were Roman citizens, and governed by Roman laws." Vide Macpherson's Annals of Commerce, vol. i. p. 197, and Beauties of England and Wales, vol. ix. p. 593.

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tions; some paved and broad for the convenient march of large armies, which were afterwards called by the Saxons, *streets*, and so continue to be in many parts of England to this day. Others unpaved; these were denominated *fosses;* a word not confined, as has erroneously been supposed, to the ditch that surrounded their encampments, but signifying more properly, and in a more enlarged sense, any hollow passage *."

We always in the neighbourhood of a station may trace forts and strong holds of some description, by the termination of names of towns or villages. Burgh, Borough, Burton, &c. are certain indications of such. Near Lindum we find *Washingburgh*, and *Burton*, where have been found remains of the Romans, and, according to Dr. Stukeley †, there are likewise some traces of small forts. Besides the above, we find evident remains of a summer camp at Ingoldsby, and antiquities, with the floor of a building of some extent, and supposed to have been the villa of a commander, have also been recently discovered at Scampton †. These we shall endeavour to describe hereafter, and at present proceed in our attempt to ascertain the real situation of the other stations ascribed to Lincolnshire ‡.

Bourn, Dec. 24, 1811. M.

(*To be continued.*)

ACCOUNT OF THE

PENNY-WHITTLE HEDGE,

WHICH IS MADE ON ASCENSION-DAY, EVERY YEAR, AT WHITBY IN YORKSHIRE.

In the fifth year of the reign of Henry II. the Lord of Uglebarnby, then called William de Bruce; the Lord of Smeaton, called Ralph de Percy; with a gentleman and freeholder called Allatson, did, on the 16th of October, 1159, appoint to meet for the purpose of hunting

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* Dickinson's Antiquities, &c. in Nottinghamshire, vol. i. Observations on the Map, p. 4.

† Life of Carausius, vol. ii.

‡ Illingworth's Topographical Account of Scampton.

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the wild-boar in a certain wood or desart place, belonging to the Abbot of Whitby: the name of the place was Eskdale-side; and that of the abbot, Sedman. These young gentlemen being met, with their hounds and boar-staves, in the place before mentioned, and having found a great wild-boar, the hounds pursued him to the chapel and hermitage of Eskdale-side; in which chapel was a monk of Whitby, who was an hermit. The boar being closely pursued and dead-run, took in at the chapel-door, there laid down, and presently died. The hermit shut the hounds out of the chapel, and kept himself within at his meditations and prayers, the hounds standing at bay without. The gentlemen in the thick of the wood being just behind their game, followed the cry of the hounds, and coming to the hermitage, they called to the hermit, who opened the door and came forth. The boar being now dead, and the hounds having been put from their game, the hunters ran with great fury upon the hermit, and with their staves they beat him so unmercifully that he died a short time after. The noblemen perceiving themselves to be in a perilous situation, in consequence of their barbarous conduct to the hermit, fled to Scarborough for refuge; but the abbot being in great favour with the king, caused them to be apprehended and removed from their sanctuary, and thus they became exposed to the rigour and severity of the law, which was death for death. But the hermit, who was a devout man, being at the point of death, desired the abbot to send for the persons who had wounded him, with which request the abbot complied; and the gentlemen being brought before him, he said unto them, " I am sure to die of the wounds you gave me;" to which the abbot replied, " And they shall as surely die for the same." But the hermit said, " Not so; for I will freely forgive them my death, if they will be content to comply with the penance which I shall enjoin on them, for the safeguard of their souls." The gentlemen seemed willing to acquiesce in any penalty he might wish to have inflicted upon them, provided he would save their lives. Then said the hermit, " You and your posterity shall hold your lands of the

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abbot of Whitby, and his successors, in this manner. That upon Ascension-day, you, or some of you, shall come to the wood of the Strayheads, which is in Eskdale-side, the same day at sun-rising, and there shall the abbot's officer blow his horn, to the intent that you may know where to find him; and he shall deliver unto you, William de Bruce, ten stakes, eleven stout *stowers*, and eleven *yethers*, to be cut by you, or some of you, with a knife of *one penny price*; and you, Ralph de Percy, shall take twenty-one of each sort, to be cut in the manner aforesaid; and you, Allatson, shall take nine of each sort, to be cut as before; these you must take on your backs, and carry to the town of Whitby, and you must be there before nine of the clock, the same day before-mentioned.

"At the same hour of nine of the clock, if it be full sea, your labour and service shall cease; and if low water, each of you shall set his stakes to the brim, each stake placed one yard from the other; and so *yether* them on each side with your *yethers*; and so stake on each side with your stout *stowers*, that they may stand three tides, without removing by the force thereof. Each of you shall do, make, and execute, the said service, at that very hour, every year, except it be full sea at that hour; but when it shall so fall out, this service shall cease. You shall faithfully do this, in remembrance that you did most cruelly slay me; and that you may the better call to God for mercy, repent unfeignedly of your sins, and do good works. The officer of Eskdale-side shall blow, Out on you! Out on you! Out on you! for this heinous crime. If you or your successors shall refuse this service, so long as it shall not be full sea, at the hour aforesaid, you or yours shall forfeit your lands to the abbot of Whitby, or to his successors. This I entreat, and earnestly beg, that you may have your lives and goods preserved for this service; and I request of you to promise, by your parts in heaven, that it shall be done by you and your successors, as it is aforesaid requested; and I will confirm it by the faith of an honest man." Then said the hermit, "My soul longeth for the Lord: and I as freely forgive these men my death, as Christ forgave

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the thieves on the cross. And in the presence of the abbot and the rest, he said moreover these words: "*In manus tuos, Domine, commendo spiritum meum, a vinculis enim mortis redemisti me, Domine veritatis. Amen.*"

So he yielded up the ghost the eighth day of December, anno Domini 1159; upon whose soul may God have mercy. Amen.

This service still continues to be performed with the prescribed ceremonies, though not by the proprietors in person.

W. PUTSEY.

Pickering, Dec. 18, 1811.

BIBLIOGRAPHICAL ANECDOTES.

SIR, *Upper Guildford Street, London, Oct.* 8, 1811.

THE nature of the business in which I am engaged requiring some knowledge of bibliography, that science has, for some time past, engrossed the greater part of my attention, and whilst perusing the works of the different writers on this subject, of which the French, without doubt, form the most numerous class, I have occasionally taken notes of what I conceived to be most curious and interesting; and should you deem the specimens I send you worthy of insertion in the Enquirer, I have only to hope that they will afford as much information to your readers, as they have given pleasure in their search, to

You humble servant,

SIVAD.

Bayle (Pierre) Dictionnaire Historique et Critique, revu par Prosper Marchand. 4 vols. in folio, Rotterdam, 1720. Called the third, though really the fourth edition.

This is the dearest and most esteemed edition of Bayle's Dictionary, for which reason many mercenary booksellers and others, by means of false titles bearing the date of 1720, have vended inferior editions for the true one, and so defrauded the persons to whom they were sold. To detect any cheat of this description, and to distinguish the true edition from its substitutes, remark, 1. That in the true edition the title to the dedicatory epistle to the regent is printed in red and black. 2. A detached part of twenty pages, numbered with small roman capitals, containing the preface to the first edition *(in italics)*, the bookseller's advertisement to the third edition, and the privilege of the states of Holland. 3. And, lastly, it will be necessary to examine vol. ii. and see if the article *David, Roi des Juifs*, be entire, as it ought to be employed twice, and in a different manner. In the first (which is seldom omitted) this article is contained in pages 963, 964, and the greater part of 965; in the second, on the contrary, the same article, much extended, has been separately printed on three leaves, paged 963, 964, 965, 966, 967, and 968, with an asterisk before each, to distinguish them from the preceding leaves, paged with the same numbers. It is most important to possess the abovementioned three leaves; for, if they are wanting, the copy is imperfect, and its value much diminished.

Some copies were printed on large Dutch paper, with verses by Limiers, in praise of the regent, at the head of the dedicatory epistle, which verses were suppressed in the other copies of the same edition.

Copies of this kind are precious *morçeaux;* one sold at M. d'Angard's sale in 1789 for 1400 livres, and another, of extraordinary beauty, sold at the sale of M. Meon, December 1803, for 1173 livres.

The edition next in esteem to that of 1720 is the one in 4 vols. folio, *La Haye*, 1740; and by some it is preferred on account of being rather more ample.

The other editions of this Dictionary are *Rotterdam*, 1697, 2 tomes, in 4to.—Ditto, 1702, 3 vols.—Ditto, 3 vols. *Geneva*, 1715.—The same, *Rotterdam*, 1715.—Ditto, 4 vols. Amsterdam, 1730.—Ditto, Amsterdam, *(Paris)* 4 vols. 1734.

The following work almost always accompanies the editions of 1720 and 1740.

Chaufepié (Jac. Georg. de) Dictionnaire Historique et Critique, pour servir de suite à celui de Bayle. 4 *vols.*

folio, La Haye, 1750. When separate, this work is sold from five to six guineas, according to its condition.

There is also a supplement, printed at *Geneva,* 1722, 1 vol. folio, which completes and forms the fourth volume to the editions of 1702 and 1715.

On the first appearance of this work the fanatic *Jurieu* denounced it to the consistory of the Wallonian Church, as containing much reprehensible matter, and it would have been suppressed had not Bayle promised to correct the parts objected to; but it appears he was in no hurry to fulfil his promise; for in the subsequent editions the only considerable alterations he made were in the article *David.*

FENELON'S ADVENTURES OF TELEMACHUS. Bausset, in his Life of Fenelon, says, that the transcript of this work was secretly circulated in several families previous to publication, and, according to "*Peignot Dictionnaire des Livres, condamnés au feu.*" This circulation was occasioned by the faithlessness of the *valet de chambre* to whom he gave it to transcribe. The manuscript was afterwards sold to the widow of Claude Barbin, who committed it to the press; but only two hundred and eight pages of it had been printed, when it was discovered to be the work of Fenelon; and that suspicious king, Louis XIV. ordered strict search to be made at the printers for all the sheets that had been worked off, which were confiscated and burnt; and every effort was made to annihilate this admirable production. Fortunately, a few copies escaped, with transcripts of that part which had not been printed; one of these copies was obtained by Adrian Möetgeus, a bookseller at the Hague, who, in 1699, published the whole work in 4 vols. It is said by Peignot, that every edition previous to 1720 is incomplete, but I cannot hear of any edition of that date; there is one published in twelves, at Rotterdam, in 1719, with notes critical and historical, which was reprinted in 1725, but the one of 1719 is the scarcer of the two, on account of the first impressions of the plates. Some persons have believed that in this work they could recognise the characters of

Madame de Montespan.........	as	Calypso.
Mademoiselle de Fontanges....	—	Eucharis.
The Duchess of Bourgogne....	—	Antiope.
Louvois..........................	—	Prothésilas.
King James......................	—	Idomenée.
Louis XIV......................	—	Sesostris.

Bible.—In Field's folio edition of the Bible, 1660, as well as in his octavo editions of the same, the following alteration was made in "Acts," chap. vi. ver. 3: instead of "whom *we* may appoint," he printed "whom *ye* may appoint," at the instigation of the parliament, from whom he received 1500*l*. for this forgery, which was intended to give the Independents power to choose their own teachers.

King Charles the First's works.—In the year 1677, the parliament voted two months' tax, for the more decent interment of the body of the unfortunate Charles, and to raise a monument to his memory. Mr. Chiswell, son-in-law to Royston, then printer to the king, proposed a plan to supersede the necessity of a monument, which was, that part of the sum voted should be applied to the purpose of printing a new edition of Charles's works, a copy of which, was to be fixed with a chain to every parish-church in the kingdom; this plan was approved of by many, and Charles II. himself encouraged it; but the distrusts between the king and people, the heats in parliament, and the popish plot, prevented the execution of it. On the Duke of York mounting the throne, Mr. Chiswell applied to Sir Roger L'Estrange to procure king James's recommendatory letter; this request the king refused, stating, as a reason for his refusal, that he did not believe "*Icon Basiliké*" to be his father's production; Chiswell, on being informed of this, said, that omitting "*Icon Basiliké*" would render the works imperfect, and therefore proposed printing it at the end of the works, as a sort of addenda after the finis; this the king consented to, on condition, that some expressions, which he thought injurious to the monarchy, might be expunged; but Chiswell objecting to this, it was at last agreed that the objectionable parts should be enclosed within crotchets; and thus, "*Icon Basiliké*[*]" stands at the end of the second part of the king's works, folio, 1686.

Exposicio Sancti Jeronimi in Simbolum Apostolorum. Oxonii. mccccclx(*x*)viii.—From the date (1468) of this work, it was for a long time believed, that the first press set up in England was at Oxford; and this date served as a basis for a ridiculous story, told by Atkyns, (upon the authority of a pretended manuscript in the Lambeth library, which has been since diligently, though unsuccessfully, sought after), of Bourchier, Archbishop of Canterbury, having incited Henry VI. to send "*Henry Turnour, an officer of the robes, accompanied by William Caxton, to Flanders, to entice over Frederick Corsellis, an under-workman in the printing-house at Harlem, where John Guttemberg had lately invented that art, and was then personally at work; which Corsellis was immediately sent down to Oxford under a guard to prevent his escape, and to oblige him to the performance of his contract;*" where he produced the above-mentioned piece. The presumed non-existence of this manuscript[†], and the knowledge of Atkyns's work having been written in support of the royal prerogative to printing in opposition to the Stationers' Company, give strong reasons for suspecting that no such manuscript ever was in existence; and Dr. Middleton, in his Essay on the Origin of Printing in England, has fully proved the absurdity of the story, and clearly shown than an X must have been accidently dropped, or purposely omitted to serve some sinister purpose, (which practice has subsequently become no uncommon circumstance). Most of the foreign bibliographers believed Atkyns's story, as also Maittaire in his Annals; and Palmer, in his History of Printing; and as Atkyns's works, which is entitled "*the Original and Growth of Printing, collect-*

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[*] There were seventeen editions of "*Eikon Basiliké*" printed in 1648 without the prayers, and in 1649 twelve more, six of which, at least, were printed with the prayers. There were fifty editions, in various languages, in the course of twelve months. *Anecdotes of Bowyer*, 4*to*.

[†] "The most internal proof of its forgery," says Dr. Middleton, "is ascribing the origin of printing to Harlem, for it is certain that printing was first invented and propagated from Mentz."

ed out of History and the Records of this Kingdom, wherein is also demonstrated, that Printing appertaineth to the Prerogative Royal, and is a Flower of the Crown of England, by Richard Atkyns, Esq. thin quarto, London, 1664, is very rare. The detailed account of the story may be consulted in either Maittaire's or Palmer's work, and the refutation of it in Dr. Middleton's Essay, or Dibdin's new edition of Ames's Typographical Antiquities, vol. i. quarto, 1810.

MY LUMBER-ROOM.

(Continued from vol. i. p. 256.)

Those who have deigned to honour this lumber-room with their notice, will ere now have perceived that, under a title which might have appeared to them (to say the least) a whimsical one, I meant to treat of a subject which seems to be but little understood, although one of the most important to mankind, and one that has been discussed by many; namely, Education. I have already expressed my sense of the absurdity of general systems, and that all the defects, both physical and moral, by which man is degraded from his original dignity, arise from the blind subjection to opinion, fashion, or prejudice, of those who are instrusted with the rearing of infancy and the guidance of youth. I had not the vanity to believe that my humble exertions would be able to contend efficaciously against these three powerful destroyers of man's dignity, or that my feeble accents would prevail over the stentorian voice of the learned men, who have handled, and are still handling, the same subject. But I depended, in a great degree, for some success on the talismanic charms of *novelty*; for I am certain that my ideas on education are no less in opposition to those generally exposed in the many treatises hitherto extant, than to those practically adopted. Another motive of encouragement was Mr. Lancaster's extraordinary success, who seems to have bewitched the whole country, except the Anti-Jacobin reviewers, with his borrowed system, and by the delusive prospect of abruptly annihilating the interval between the cradle and manhood, and of forcing men as we do mushrooms. Indeed, the infatuation for Lancaster's system is an additional proof of the resistless power of fashion. Had this universal favourite been left to his own exertions, and had the result produced a generation of men superior to the past ones, experience, the only test of theory, would have sanctioned his means, and their adoption would have been approved by reason itself.

I have now neither the time, nor the wish, to discuss a system that has nothing to recommend it; not even novelty or originality. It was known in times of old, it has been for ages past practised by the most barbarous nations, indeed (and I have personal experience for the ground of my assertion) there is not a teacher who has not, more or less, put it in practice, as the most natural and easy means of diminishing his own labour. All that can be said in its favour, (for I very much question whether society can ever be benefited by it) is that it tends to increase the number of parrots to annoy us by their noisy chatter. Very probably this sort of culture may bring forth a few evanescent and gaudy flowers, but it will never produce a crop of nutritious fruits. Upon the whole, whatever may be the general way of thinking, sanctioned by fashion, and although the example of Scotland be brought forward in support of it, I dare assert that the glimmering light produced by so limited an instruction as that commonly acquired in our lower schools, is more likely to lead astray than the most profound obscurity of absolute ignorance. Out of the former arise conceit and its concomitant obstinacy, both enemies to sound reason; whilst, conscious of its dangers, the latter is not only grateful for, but even courts, the guiding hand of knowledge. I hear, without being appalled, the loud hue and cry that will be raised against me by a numerous tribe of fanatic politicians, modern philosophers, and tender-hearted philanthropists. I scorn the anger of the first, and pity the delusion of the others: but the great book of universal experience, if read with an unbiassed mind, will demonstrate the truth of my asser-

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tion more forcibly than any argument, founded on theory, can ever controvert it.

But it will be asked by many well-meaning men, and to them alone I am willing and ready to listen; Do you then wish to withdraw entirely the benefits of instruction from the poorer class of mankind? I answer, although I deny the possibility of any advantage resulting from an instruction so curtailed, so contracted, so partial as that conveyed in our public schools in general, but more especially in those of an inferior order; although I am perfectly satisfied with the evils resulting from such stunted trees of knowledge, yet I am far from denying the great, the immense benefits that would accrue to society at large from a *rational* process of *education*, adapted to every ones probable situation in life, and to the bent and the extent of every ones genius, faculties, or inclinations. The reason why we naturally do not understand each other is, as I have already remarked, because the words *instruction* and *education* are so generally blended together, that they are become in a manner synonymous, which is far from being the case. I wish for the universal means of education, with no other limits than the moral and physical faculties of its objects; but I deprecate *in toto* the present system of cramming food, palatable or not, into the throats of all, without considering that the same kind of medicine which would be beneficial and even necessary for one constitution, would be lost on another, and death to a third. Far, therefore, from wishing to deprive any part of mankind of the benefit of education, the intention of these sheets was to have pointed out the inefficacy, the danger, and the irrationality, not to say the barbarity, of the present mode of conducting it; and I had the presumption to hope that the ideas I intended to bring forward in this desultory manner, might appear worthy the notice of some enlightened and sincere well-wisher to his fellow creatures, who, taking them up, would have attired them in a more dignified garb. With the purest intentions, with a heart glowing with the most ardent wish of being useful to society, but at the same time no less conscious of the difficulties

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I had to encounter than of the deficiency of the means I could command, I stepped boldly forwards, and would have undauntedly attacked the three monsters that has so long preyed on the best faculties of man. But a wayward fate puts at once a stop to my intended career, and I am compelled to conclude abruptly, and in their present imperfect state, these favourite lucubrations, the result of almost half a century of observation, reflection, study, and experience, in many countries, and in different stations of life. Called to my native shore; attracted beyond the Atlantic by the resistless magnet of brotherly affection; impelled by the powerful motive of the future welfare of a rising family, an intervening trackless sea, and a distance of more than three thousand miles, will soon prevent my further communicating with the respectable conductors of the Enquirer. I leave them and their readers to decide whether, and how far, this interruption of my labours is likely to affect the interest of the one, or the entertainment of the others. Before I take my final leave, however, I shall use a last effort to impart to my readers a portion of those feelings, which arise spontaneously in my bosom when I conder the condition of children in this part of the world, which calls itself the most civilized. But, still yielding to that *impetus animi*, vulgarly called *vagary*, by which I have hitherto been led, I shall beg leave to take, as usual, a rather circuitous road, and, transporting at once them and myself over the Atlantic, take in their company a short, but impressive, survey of what passes in the West Indies.

O thou reverend divine! thou who hast so valiantly fought the battle of thy sable brethren, let thy undaunted spirit breathe in me a portion of that fire which has immortalized thy name! And thou, my old respectable friend! whose indefatigable exertions have founded, on the sandy shores of burning Africa, a colony of human creatures redeemed from bondage; inspire me with that enthusiastic zeal, that has made thee overcome the united efforts of inveterate prejudice and of deep-rooted avarice. For following both your footsteps, I am going to open again that book, not the famous red one, that has caused so much mischief amongst our neighbours across the channel; but a book to which the epithet *black* can be applied, *only* for want of a more forcible expression. Its blackness, however, is not that of jet, not that of ebony, not that even of the colour of the wool which adorns the head of your protegées, but may be compared to the hue of those acheronic waves, which have baffled the descriptive powers of the bards of old ; or, perhaps, to that horrible dye, which death and time have stamped on the Egyptian mummies. That book, which records the load of miseries inflicted on animated beings by the most malignant, by the basest of passions. In a word, that collection of evidences concerning the Slave Trade received by a committee of the House of Commons. I do not intend, however, to follow the miserable negro from his native cot to the market, where he becomes the property of the best bidder. This would lead me too far from my subject; but I beg the benevolent reader, who certainly will thank me for not exposing again to his view those scenes of woe and wretchedness, to follow with me the new comer to the theatre of his future labours. Behold him then conveyed to his new master's plantation, there confined in a large shed, already crowded with numbers of his unhappy countrymen, and given up, like them, to the caprice of a taskmaster; who, we must suppose, has purged away the milk of human nature, if there ever were any in his breast. There he begins his miserable career, by breathing an air infected by the exhalations of a heated crowd. There he must satisfy the cravings of hunger with a scanty and ill-tasted food. There he rests his weary limbs on a wretched pallet, from which he rises only to extort from his mother-earth, by the sweat of his brow, not his own subsistence, not the means of affording comforts to a beloved family, for which the smiles of affection and the caresses of innocence amply repay, but to satisfy the insatiable avarice, and to supply the wanton luxury, of a stranger—of a stranger, did I say !—no ! of a master. A master ! a galling word ! which at once retraces the most horrible idea, that of slavery.

Behold further, with what an horrid grin that fellow-

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slave, whose sable hue, not confined to the skin, pervades the innermost recess of his heart, brandishes his formidable scourge, the sight of which strikes terror into the very soul of the most hardened of the gang. Look at yon miserable being, emaciated by hunger, enervated by sorrow, and overcome by the fatigues of labour and by the heat of an equinoctial atmosphere. Panting for breath, he suspends his exertions—for a single moment! but even that moment of rest, commanded imperiously by nature itself, is a *robbery*, and as such draws on his naked shoulders the vengeance of that brute in human shape, who has abandoned altogether nature and her feelings. Shall I go on with this picture of wretchedness? Or is this short one sufficient to extort the sympathetic tear? Let us drop the curtain; and by the same magic powers of the wand that wafted us over the sea, suddenly return to that blessed land where the groans of slavery are never heard, and where there cannot, or at least there ought not to be found such a thing as a scourge-armed taskmaster: to that fortunate island, where liberty enthroned in all its glory protects, or ought to protect, equally with her beneficent hand the rich and the poor, the strong and the weak, against the abuse of wanton power. Suffer me, however, to take for my *compagnon de voyage* the faithful Domingo, who, during my short stay in those remote regions which we have just visited together, attached himself to me with the most sincere affection, in return for which, he begged to be removed from the painful sight of his suffering brethren, and to become a sharer in the blessings of a land of liberty.

Suppose us now safely landed, after having escaped the dangers of the turbulent elements, and the pestilential breath of that yellow monster whose fury wages a more destructive war against our undaunted sailors and heroic soldiers than the myriads of the Corsican. Domingo's impatience to see, and perhaps to be seen, for vanity equally finds its way in every breast, made inaction painful to him, and no sooner had he refreshed himself with a night's sleep than he sallied forth to feast his curiosity. On his return from his ramble about the town, I was much surprised to perceive in his counte-

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nance, a sort of sullenness that I had never before observed. My first and most natural surmise was, that his black hue and woolly curls had drawn upon him some disagreeable sneers, or some uncourteous behaviour from an ignorant mob, and I was about to enquire when he drily told me, that I had deceived him in telling him that in the land to which I was to convey him, there were no such things as task-masters or cat-ô-nine-tails; and without allowing me any time to ask for an explanation, he added in one breath—"Oh, massa, me will go back to the other country. If they have here the inhumanity thus to beat poor babes of their own flesh and blood, what will they not do to a negro stranger? To be sure Domingo would not flinch from their lashes, if, by receiving them, he could save the little innocents: but me fear very much that the cruel men would flog me, and not give a blow less to the babes." I suffered him to vent the whole stock of his sensibility, which had its source in nature itself, and when he had exhausted it, I exerted all the strength of my eloquence to make him comprehend the motives of this apparent cruelty. He listened to me with signs of impatience, and his concluding sentence was: "Massa talks mighty well, but Domingo cannot see the necessity of flogging and beating poor little creatures that have not the strength to bear the blows like negro slaves." The matter upon investigation turned out thus: during his ramble, Domingo heard some most pitiful cries and shrieks issue from a house which he was passing; naturally curious, he approached the window, and saw that these cries were caused by a man administering a severe correction to a child.

The next day, having some business that called me early from home, I went out followed by my black attendant. It was still dark, and one of those wintry mornings in which the severity of the season, far from being modified by a clear sky, was, on the contrary, increased by wind and snow. There were as yet but few houses open, and the majority of passengers we met were children of almost every age, warmly clad it is true, but all shivering with cold, and more inclined to weep than to exhibit the natural cheerfulness of youth. Domingo at first appeared to pay but little attention to this circumstance, and habit had rendered it familiar to me. At last, however, the lamentation of one of these little creatures, rather louder than those of the rest, caught my companion's ears: running eagerly towards the sufferer, he enquired what was the cause of his sorrows, and what business he had to be in the streets so early and in such weather? To which questions he received for answers the monosyllables, "*cold*" and "*school.*" Feeling himself the effects of the first, and unable to apply the only remedy, to wit, warmth! he returned immediately to me, and asked the meaning of the second. I told him that by a school was meant a place where children were taught many useful things, such as reading, writing, arithmetic, &c.

Domingo. "So, massa, if I understand you right, a school is a place where these little things are sent to be made clever when they become men."

Self. "Just so."

Dom. "From which I must conclude that in this fine country you set no value on a man unless he be clever. Then, massa, me not clever, and will return to yon country, where a negro like me is valued, not on account of his cleverness, but on account of his usefulness as a man."

Self. "I never meant to tell you that in this country the value of a man is absolutely estimated by his cleverness; no, many a one who is not clever may be more useful, and perhaps more estimable, than very clever ones."

Dom. "Massa, massa, me not believe you; for if it were as you tell me, would you run the risk of destroying the little man by sending him out at so early an hour, in such weather, perhaps without his breakfast, and that for the sole purpose of making him clever? The most cruel of our task-masters in yon country would not thus expose the life of poor negro children merely for the sake of making them clever men." In vain did I attempt to give him an idea of the immense benefits derived from learning; in vain did I endeavour to hammer into his head that the man who could read, write, cast accounts, and talk Latin, Greek, and Hebrew, however crippled, and however sickly, was infinitely more useful to society than thousands, nay, than millions, of those ignorant wretches who can neither read nor write, although they can till the ground, fight our battles, plough the deep, and perform many other such trifling things: that therefore the lives of thousands of children sacrificed at the shrine of learning, were more than counterbalanced by a single literary meteor, however transient be its brightness. Domingo answered nothing to this fine rhetoric of mine; but a shaking of the head significantly expressed his opinion on the whole.

In order to give an additional weight to my arguments, I resolved to introduce Domingo into some of our nurseries of youth. Accordingly, the next day I took him with me to a school, (I beg pardon, I ought to have said *academy)* where the very first rudiments of learning are taught; we were ushered very civilly into a room, in which we found at least fifty children, I might say more properly, babes, the oldest not appearing more than six or seven years old, the whole snugly cooped together, very nearly like pickled herrings in a barrel. And very lucky it was, for the weather was exceedingly cold, and there was very little fire in the grate, notwithstanding which the room felt so comfortable and warm, that, had it not been for certain effluvia, not of the most grateful nature to the olfactory nerves, that embalmed the atmosphere, I could have forgotten there both winter and its severity. But this last circumstance compelled me, however reluctantly, to take an abrupt *congé*, after having enjoyed the *inexpressible* pleasure of hearing three or four pretty little interesting parrots going through that part of their primer that had taken the strongest hold of their infantine memory.

During our stay in this cradle of learning, I often cast a look on my attendant, but I never could meet his eyes, which were the whole time rivetted on the children with an "inexpressible expression" of every sensation which belongs to the bright side of human nature. It was not the look of the fond mother watching with tender solicitude over the cradle of her little darling; it was not the look of compassion at the sight of suffering hu-

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manity; it was not the look of the benevolent philanthropist, when he witnesses wanton acts of cruelty or injustice; but a compound, a mixture of all three. When again in the street he did not come up to me, but staid behind, and looked down like one in deep reflection. My rapping at another door roused him out of his reverie, and he followed me into a school-room, whose dimensions were indeed considerably greater than those of the former one, but which contained a far greater number of living creatures from seven to fifteen or sixteen years of age. I apologized for my intrusion, on the score of having something to communicate to one of the boys, the son of a friend of mine residing in the country. On going up to the head master, to beg leave to take out the boy for a few minutes, we saw one of the under ushers, or perhaps a servant, with a bunch of birch twigs in his hand, with which he had been administering manual correction to four of the the boys, who were still crying lamentably, whilst the countenance of two other bystanders seemed to portend the same fate *.

C. D. E.

(To be concluded in our next.)

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* I was in hope, and fully intended to conclude my lucubrations in the present number, but my subject seems to extend under my pen beyond what I expected; so that, however unwillingly, I must again submit my ideas to the reader in the next. It will be a kind of *post obit*, or posthumous intrusion on my friends at home, which, recalling me to their mind, will, perhaps, draw forth an ejaculation for him who will then most probably be the sport of wind and waves.

SPECIMENS

OF THE SIMILARITY AND CONNECTION OF LANGUAGES.

The word *sack* is nearly the same in most languages: שק, *sac*, Hebrew; *σακκος*, Greek; *saccus*, Latin; ſac, Saxon; *sack*, Gælic; *sack*, Welsh; *sacco*, Italian; *saco*, Spanish; *sac*, French; *sack*, Dutch; *sakk*, Islandic.

Bishop, in Irish is *easbog*; Welsh, *esgob*, 'Επισκοπος, Greek; *episcopus*, Latin; *evêque*, French; *obispo*, Spanish; *bispo*, Portuguese; *vescovo*, Italian; Biꞅcoƿ, Saxon; *bischop*, Danish; *pispok*, Hungarian; *bischof*, German.

The word *sugar* has undergone little variation through a variety of languages; thus, *σακχάρον*, Greek; *saccharum*, Latin; *zuccaro*, Italian; *azucar*, Spanish; *açucar*, Portuguese; *sucre*, French; *sucker*, Danish; *sowgr*, Welsh; *zukker*, German; *shekar*, Persian.

The word *wine* has suffered little mutation, either in ancient or modern language, יין *iin*, Hebrew; *οἶνον*, Greek; *vinum*, Latin; *fin*, Irish; *wiin*, Danish; *gevin*, Welsh; *wein*, Teutonic; *vinho*, Portuguese; *vino*, Italian; *vin*, French; ƿin, Saxon.

From the Persian word *juvan, young, &c.* is perhaps taken the Latin *juvenis*; Italian, *giovane;* French, *jeune;* English, *juvenile*, &c. &c.

Min, Saxon; *mein*, Teutonic; *my, mine*, English; *min*, Persian

The term for *death*, is, in many languages, strikingly similar: *mors*, Latin; *marew*, Celtic (to die); *mord*, Islandic; *mort*, French; *morte*, Italian; *μορος*, Greek (Fate); מות, *muth*, Hebrew; *mortality, mortal*, English. It is curious to observe, that *morai*, or *moray*, in the Otaheïtan language, signifies a *sepulchre*.

Our English word *turban*, or *turband*, is probably derived from the Persian, *doolbend, what encompasses the head or body*. The word is a compound, *dool* * signifying *a wheel, rotation*, &c. and *binden, to bind*; *turbante*, Italian; *turbante*, Spanish; *turban*, French, &c.

The English numeral *two* runs nearly parallel with the other European, and some of the ancient languages: *do*, Irish; *duy*, Welsh; *δύω*, Greek; *duo*, Latin; *due*, Italian; *dos*, Spanish; *deux*, French; *toe*, Danish; *dwa*, Polish, *twa*, Russian; *twee*, Dutch; *twa*, Swedish; *zuo*, Teutonic; ꞇƿa or ꞇƿy, Saxon; *doo-o*, Malayan (as spoken on the western coast of Sumatra); *dho*, Bengalee.

The English word *room, i. e.* an apartment in a house, has a tolerably near parallel, in the Swedish word *rüm* or *ruum;* and also in the Malay *rooma*, a house, room, or apartment. See Howison's Malay Dictionary.

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* See Richardson's Dictionary.

English, *odour;* Latin, *odor;* French, *odeur;* Italian, *odore;* Spanish, *buen olor;* Persian, *atur* or *ottar,* as *ottar gul,* or *odour of roses,* a costly and particularly odoriferous oil, which is procured by distillization, from the petals of a peculiar species of roses. It is said, that if two drachms of this oil can be procured from one hundred weight of rose flower leaves, the season is accounted singularly favourable. The fair sex are indebted to an Indian lady for the discovery of this elegant perfume. See Pennant's View of Hindostan, and the first volume of Asiatic Researches.

Κάμηλοτη, Greek; *pannus camelinus,* Latin; *camelot,* French; *cambellotto,* Italian; *camelot,* German; *camelote,* Spanish; *kamlet,* Arab; *camlet,* English.

The camlets made in the eastern countries, are a mixture of silk and the hair of camels. The English camlets (which are chiefly manufactured at Norwich, and in its vicinity), are made entirely of worsted, of which large quantities are annually exported to Sardinia, Sicily, the Levant, and other countries in the south of Europe.

גמל, Hebrew*; *Κάμηλος,* Greek; *camelus,* Latin; *camello,* Spanish; *chameau,* French; *camello,* Italian; *cameel,* German; *jemal,* Arabic; *camelie,* Syriac or Assyrian†.

Cucu, Persian; Κοκκυξ, Greek; *cuculus,* Latin; *coucou,* French; *cuculo,* Italian; *cucu,* Portuguese; *cuclillo,* Spanish; *cuach,* Irish; *kuckuch,* Teutonic; *kochkock,* Dutch.

The surprising similarity of the *Chinese* word *keuen,* a *dog,* with the Greek *κυων,* and the Latin *canis,* will not escape the reader's notice. Some of the European languages follow the Greek: others the Saxon. French, *chien;* Italian, *cane;* Irish, *kene;* Welsh, *chenu;* Saxon, ᵭoc; Belgic, *dogge;* Teutonic, *dock;* English, *dog.*

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* The name of the third letter in the Hebrew alphabet. The names of most of the Hebrew letters are significant words. See the Hebrew word שן in these remarks.

† According to Scaliger. See his Vet. Græcorum, &c.

Several Greek words may be traced to the Chinese. For much curious information, respecting the ancient communication of China with Greece, see Dr. Hagar's Pantheon Chinois.

From the Hebrew word בור, a *hole* or *pit*, we have the English words, *bury*, *burial*, *burrow*, &c.

קרן, Hebrew; *κέρας*, Greek; *corne*, French (hence our English word *cornet*, an octave trumpet) *cuerno*, Spanish; *corno*, Italian; *korn*, Welsh; *koorn*, Arabic; hoꞃn, Saxon (whence our English word); *cornu*, Latin.

Benignum *cornu*. HOR.

The casual coincidence of the French verb *manger*, and the Italian *mangiare*, with the *Pelew* word *munga*, to *eat*, is worthy of observation. Our English word *munch* is probably from the French. See Keate's Account of the Pelew Islands.

Rubinus, Latin; *rubis* or *ruby*, French; *rubin*, German; *rubino*, Italian; *robyn*, Dutch; *rubi*, Spanish; *rubim*, Portuguese; *rubin*, Danish; *rubin*, Polish; *rubin*, Swedish; *ruby*, English; hence also, *rubric*, expressing the contents of a law book, or some direction or rule; the first letter (and not unfrequently the first word) of which is generally written, or illuminated, with *red ink*, or *paint*.

Abad, Persian, a *habitation*, *residence*; *bod*, Welsh, a mansion; English, *abode*. From the Persian word comes the Egyptian and Macedonian, *abydos*.

The word *neil*, in the Telinga, signifies *water*, (as I am informed by a person who understands something of that language); the Irish word *neeal* signifies a *cloud*; and the Welsh *niule*, a *mist* or *fog*.

In Latin, *dens* is a tooth; Italian, *dente*; French, *dent*; Portuguese, *dentes*; Spanish, *diente*; Greek, οδοντα; Dutch, *tant*; Welsh, *dant*; Swedish, *tand*; Hebrew, שן[*]; Persian, *dendan*, as *mar dendan*, a serpent's tooth, an expression found in the writings of the oriental poets. Our bard of Avon also has it,

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[*] Also the name of the Hebrew letter ש, or *sh*. See Bochart's Canaan illustrated.

How, sharper than a *serpent's tooth* it is;
To have a thankless child.

KING LEAR.

Clemens Alexandrinus says, that the Assyrian and Egyptian hieroglyphics, represent a *child* who has been ungrateful and cruel to its parents, by the figure of a small *snake* or *viper*. See Dr. Jenning's Jewish Antiquities.

Koosen, Belgic; *to sooth with insidious words; to wheedle;* hence our English words, *cozen*, to cheat; *cozenage*, &c.

> Strange *cozenage!* none would live past years again,
> Yet, all hope pleasure from what still remain;
> And from the dregs of life, think to receive,
> What the first sprightly running could not give.
>
> DRYDEN, AURENGZEBE, ACT 4.

In the French language, *chemise* signifies a *shirt;* and *cammicia* is Italian for the same article of habiliment. In the Madagascar tongue, *chameser* expresses the same thing. I believe there are other words in that language, which have affinity with some of the European as well as Asiatic languages. J. H. N.

Near Leeds, Dec. 6, 1811.

(*To be continued.*)

TO THE EDITORS OF THE ENQUIRER.

The following extracts contain so many just and useful observations on the most common methods whereby men are led to reason falsely, and at once display, and are so calculated to produce, accuracy of thinking, that I am induced to send you this specimen for insertion in your useful Miscellany, should it meet your approbation.

They are taken from "The Art of Thinking," a treatise on logic, written originally in French, by Messrs. Du Port Royal, afterwards translated into English, and the fourth edition, from which I copy, was printed at London, in the year 1702. The style is concise and clear, but the language is so distant from modern precision as to need several corrections; which, where the sense, the rules of grammar, or an obvious improvement with a little alteration, gave occasion for it, I have attempted to make. I am, respectfully

Yours, &c.

T. M.

OF THE

SEVERAL SORTS OF VICIOUS ARGUMENTS, CALLED SOPHISMS.

ALTHOUGH when we understand the rules of arguing rightly, it be no difficult thing to distinguish those that are false; nevertheless, as examples to be avoided make a deeper impression on our minds, than examples that are worthy imitation, it may not be amiss to lay open the sources of bad arguments, which are called sophisms, or paralogisms, whereby they may the more easily be avoided.

I shall reduce them only to seven or eight heads, there being some so notoriously absurd that they are not worthy remembrance.

SOPHISM 1.

To prove another thing than that which is in question.

This sophism is called by Aristotle, *Ignorantion Elenchi*: the ignorance of that, which is to be proved against the opponent. For in dispute we grow hot, when many times we do not understand one another. This is a common vice in the disputes among men. Through passion or falsehood we attribute that to the opponent, which is remote from his thoughts, to combat him with more advantage; or we tax him with consequences which we think we can draw from his doctrine, which he disavows and denies. All this may be referred to the first sort of sophism, which a man of worth and sincerity ought to avoid above all things.

It were to be wished that Aristotle, who is careful to admonish us of this defect, had been also as careful to avoid it. For it cannot be denied that he has encountered several of the ancient philosophers by citing their opinions, not with that sincerity which he ought to have done. He refutes Parmenides and Melissus, for admitting but one sole principle of all things; as if they had meant by that, the principle of which they are composed; whereas they meant the sole and only Principle from whence all things draw their original, God himself.

He accuses all the ancients for not acknowledging privation to be one of the principles of natural things; and, for that, he inveighs against them as dull and rustic. But who is so blind as not to see, that what he represents to us as a grand mystery, not known till he discovered it, could never be concealed from any man; since every man must apprehend, that the matter of which a table is made, must have the privation of the form of a table, that is, can be no table before it is shaped into a table. It is true, the ancients never thought of this use of privation to explain the principles of things natural, because indeed there is nothing less serviceable to that purpose. It being obvious that we do not, therefore, the better know how a clock is made, because we know not that the matter of which a clock was made, was not a clock before.

Therefore it is a piece of injustice in Aristotle to reproach those ancient philosophers for having been ignorant of a thing which it was impossible for them not to know; and to accuse them for not making use of a principle for the explanation of nature that explains nothing at all: nay, he is guilty of delusion and sophism, while he obtrudes upon us the principle of privation for a rare secret, when this was not that which they sought by inquiring into the principles of nature. For it is plain, that nothing can be, before it is. But we are desirous to know of what principles it consists, and what is the cause that produced it.

Thus, for example, there was never any statuary, who, to teach another to make a statue, gave his scholar that lesson for his first instruction, wherewith Aristotle would have us begin the explanation of the works of nature. Friend, the first thing you are to know is this, that for the making of a statue, you must choose a piece of marble, which is not yet that statue which you design to make.

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SOPHISM 2.

To suppose for truth the thing that is in question.

This is that which Aristotle calls *begging of the question,* which we manifestly see to be contrary to reason: since in all arguments, that which serves for proof, ought to be more clear and known than the thing which we would prove. Nevertheless Galileus accuses Aristotle, and that justly, of falling into this error, when he would prove by the following argument, that the earth is the centre of the world.

'Tis the nature of heavy things to tend to the centre of the world, and of light things to keep at a distance from it.

Now experience shows us, that heavy things tend to the centre of the earth, and light things keep at a distance from it.

Therefore the centre of the earth is the centre of the world.

It is most apparent that there is in this argument a manifest begging of the principle. For we find that heavy things tend to the centre of the earth; but where did Aristotle learn, that they tend to the centre of the world, unless he supposed the centre of the earth and the centre of the world to be the same? which is the conclusion that he would prove by this argument.

To this sophism may be referred those arguments which are drawn from a principle different from what is in the question, but which is known to be no less contested by the opponent. For instance: there are two maxims equally constant among the Catholics. The one, that all points of faith cannot be proved by scripture alone. The other, that children are capable of baptism. Therefore an Anabaptist would argue ill, to prove against the Catholics that they are in the wrong to believe that children are capable of baptism, because we find nothing to prove it in scripture, because that would suppose that we ought to believe no article of faith but what is in the scripture, which is denied by the Catholics.

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Lastly, we may refer to this Sophism all those arguments by which we endeavour to prove one thing unknown, by another altogether as much unknown; or a thing uncertain, by another thing as much, or more uncertain.

SOPHISM 3.

To take for the cause that which is not the cause.

This sophism is very usual among men, and they fall into it several ways. The one through the bare ignorance of the real causes of things. Thus philosophers have attributed a thousand effects to the fear of a vacuum, which at this day and by most ingenious experiments is demonstrably proved to have no other cause than the ponderosity of the air. The same philosophers teach us, that vessels full of water crack when the water is frozen, because the water closes itself, and leaves a void place which nature cannot endure; whereas it is well known that those vessels break, because the water when congealed takes up more space than when fluid, which is the reason that ice swims upon water.

To this may be referred that other sophism, when we make use of remote causes, and such as prove nothing, to prove things either clear of themselves, false, or doubtful, as when Aristotle would prove that there are three simple motions, because there are three dimensions, though it be a very difficult thing to find a conclusion from the premises.

The same philosopher attempts to prove, that the Heaven is unalterable and incorruptible, because it moves circularly. But first, it is not well discovered yet what circularity of motion has to do with the corruption or alteration of bodies. In the second place, there is less reason to be given why a circular motion should be less conducive to corruption than motion in a right line.

In the second place, we fall into this sort of sophistry through that silly vanity that makes us ashamed to confess our ignorance; from whence it happens, that we rather choose to forge imaginary causes of the thing for which we are asked the reason, than to con

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fess that we know it not; and it is an ingenious kind of way whereby we confess our ignorance. For when we see the effect of a cause unknown, we dissemble that we have discovered it when we have joined to this effect a general word of virtue, or faculty, which forms in our mind no other idea but only that the effect has some cause, which we knew before we found out that word. For example, there is nobody but knows that the arteries beat, that iron cleaves to the adamant, that senna purges, and poppy stupifies. They who make no profession of knowledge, and who are not ashamed of ignorance, freely confess that they know the effects, but understand not the cause; whereas others that would blush to say so, and pretend to have discovered the real cause of effects, presently cry there is a pulsific virtue in the arteries, a magnetic virtue in the adamant, a purgative virtue in senna, and a soporific virtue in poppy. Now is not this quaintly resolved? And might not the Chinese, with as much facility, have extricated themselves from all their admiration of our clocks when first brought into their country? For they might have said they knew perfectly the reason of what others were so puzzled at, by affirming that it was only by an indicative virtue, that this engine marked out the hours upon the plane, and by a sonorific quality that the bell struck. Certainly they might have passed for as learned persons in the knowledge of clocks, as our philosophers in the causes of the beating of the arteries.

There are also certain other words that serve to render men learned at a small expense, as sympathy, antipathy, and occult qualities. Yet they that use them would utter nothing of falsehood provided they annexed the general notion of the cause to the respective words; whether it be internal or external, dispositive or active. For certain it is, that there is an active quality in the magnet, for the sake of which the iron moves to that rather than to any other stone, which men have agreed to call magnetic virtue. So that the deception consists in this, either that they imagine themselves to be more learned than others, for having found out the word; or else, being able to express the cause in general terms, they lead people to believe that they apprehend it in their understandings.

But there are others who obtrude upon us for real causes of nature, pure chimeras, as the astrologers; who refer all causes to the influences of the stars. And these are they forsooth who have found out that there must of necessity be an immoveable heaven above all the rest of the spheres, which they allow motion, because the earth produces divers things in different climates.

They reason thus: there can be no causes of such variety of productions but the influences of a heaven, which, being immoveable, has always the same aspects upon the same parts of the earth.

Thus one of these doctors, having undertaken to prove the immobility of the earth, makes it one of the principal demonstrations of that fact, that if the earth turned about the sun, the influences of the stars would be carried obliquely, which would cause great disorder in the world.

With these influences they strangely terrify the people, so that when they see any comet appear, or that any great eclipse happens, then the world must be turned topsy-turvy; and woe to Spain, Germany, or Sweden, or some other country which they have most a pick at; though there be no reason that either comets or eclipses should have any considerable effect upon the earth, or that general causes, as they are, should operate more certainly in one part than in another, or threaten a king or a prince more than a mechanic, besides that we find a hundred comets that were never infamous for any of the dire effects laid to their charge.

For what if pestilences, wars, deaths of princes, do sometimes happen after the appearance of comets and eclipses, they as often happen without any such signals. Besides, these things are so general and common, that it is much if they do not happen in some part of the world every year. So that they who conjecture at random that such a comet threatens the death of some great personage, do not hazard their reputation over much.

But it is far worse when they give these chimerical influences for the cause of the virtuous or vicious inclinations of men, as also of the particular actions and events of their life, without having any other ground than only that among ten thousand predictions it falls out by mere chance, that some one proves true. Although if a man were to judge of these things rationally, and according to good sense, he might as well say that a candle lighted in the chamber of a woman that lies in, ought to have a greater influence upon the body of the infant, than the planet Saturn, in whatever aspect or conjunction it be.

Lastly, there are some who assign chimerical causes to chimerical effects, and such are those who supposing that nature abhors a vacuity, and that she does her utmost to avoid it, feign more fictitious causes of this fictitious horror, the effect itself being imaginary; seeing that nature fears nothing, and that all the effects which are attributed to this dread of nature, depend solely upon the gravity of the air. A most wonderful science indeed, which goes about to prove that which is not, by that which is not.

Therefore when we search the causes of extraordinary effects, we ought carefully first to examine whether the effects be true. For sometimes we labour to no purpose to search out the reason of things that are not. Insomuch, that there are an infinite number of questions which are to be resolved, as Plutarch resolves this propounded by himself, Why such colts as are pursued by the wolf are swifter than others. For after he has suggested several causes, he at last brings another solution, which seems to be very true and genuine. Perhaps, says he, the thing itself may be a story. And this is the method we ought to observe in philosophizing concerning sundry effects, which are attributed to the moon; such as these, that the bones are full of marrow upon the increase of the moon, but empty when she is in her wane; and whereas the same is said of cray-fish; there is no other answer to be made but that the whole is a fable: as several persons very diligent and exact have assured me, that as well the bones, as cray-fish, are sometimes more and sometimes less full, in all the quarters of the moon. Many observations of this nature there are in reference to the cutting of wood, sowing, and gathering of fruit, grafting, and taking physic. But the world will be delivered at length from these little bondages, which have no other ground than mere suppositions that were never seriously examined *.

To this sort of sophistry ought also to be referred that usual fallacy of human wit, *Poste hoc, Ergo propter hoc*. After this, therefore by this. Hence it is, that the dog-star is concluded to be the cause of the violent heat at that time of the year which is called the Dog-Days; whereas M. Gassendus has well observed, that there is nothing less probable than this vain imagination. For this same star being beyond the line, the influences ought to be stronger in those places that lie more perpendicularly under it. And yet, when the dog-days are so vehemently hot with us, it is winter in those parts; so that they beyond the line may as well believe the dog-star to be the cause of cold, as we to believe it to be the cause of heat.

THE
BLESSINGS CONFERRED ON THE POOR BY EDUCATION,
CONSIDERED BY A POOR MAN.

SIR,

I AM a poor man, and a poor man's son; yet, by some means or other, I learned to read in my youth, notwithstanding the new systems of Mr. Lancaster and his antagonist Doctor Bell had not then been heard of. In consequence of my good luck, I have a custom, and I really am not ashamed to confess it, of now and then *looking into a book.*—"Ah," says our worthy clergyman, "so much the worse for you! how many among the inferior orders of society have had bitter reason to regret that they were ever taught to read and write."—It may be so, sir; but I am of opinion, that *more* have had reason to regret that they were *never* taught to read and write. A first cousin of my wife's, I am sorry to say, was condemned and executed two years ago, for highway robbery:—he was an Irishman, and came over to this country shortly after the rebels had been defeated by the king's troops. Patrick was as kind-hearted a creature as ever lived—frank and brave to a degree; and many a time when my wife and I have been taking him to task for not sticking to his work, and telling him his wild pranks could not end in good, he has seemed quite penitent. But, alas! sir, it was in at one ear, and out at the other—for Patrick had learned nothing when he was young; and I have often heard my neighbour the horse-breaker say, that it was of no use to put old horses into his hands, unless he had them when they were colts he could make nothing of them.

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* The world has undoubtedly made rapid progress in its emancipation from the bondages of astrology since the above was originally written; but the mass remain still clanking its fetters. Witness the numerous purchasers of Old Moore's Almanack. This must be my excuse with the more intelligent readers of the Enquirer for having extracted so much on this subject. T. M.

Can there be any situation more melancholy than that of such poor creatures as Patrick; who, if they take a book in their hands, look on it as you or I would look on a bit of wood, who can derive from it neither entertainment nor instruction; to whom its leaves are, in fact, but so much waste paper: and can it be possible that there are men, who have tasted of the enjoyment of reading, who would debar others from so pure, and at the same time so exquisite a pleasure!

I have heard it said that Education is by no means so general in Ireland as in England and Scotland; and indeed it would seem so, for you never meet with a Scotchman, and but seldom with an Englishman, who cannot both read and write, but scarcely any of the Irish, who come into this part of the country at the

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hay-making and harvest-times can do either. Now, sir, I am no politician (although I wish well to my native land), and therefore am not very sure whether what I'm going to say be proper—but of this *you* will be able to judge—only I hope you will not print it if it be likely to lead you or me into a scrape. If, however, I may be allowed to take such a liberty with state-matters, I would just hint that perhaps the people of Ireland would be more quiet if they were better instructed; nay, I must give it as my humble opinion, that Sunday Schools, and other institutions for spreading the blessings of education among the poor peasantry of that country (who, I am told, live in a sad hugger-mugger way) would do more than even *martial law* towards repressing tumult and rebellion, and introducing habits of order, and a spirit of peace, in lieu of that licentiousness and turbulence, which, if the news-papers are to be believed, prevail in a very terrible manner in the country I am speaking of. From all the different accounts that have come to my ears, I am inclined to think that my poor cousin Patrick was a pretty fair representative of the greater part of his countrymen in the lower conditions of life; and, as I am sure he would have *done* better had he *known* more, I cannot help forming this opinion of the Irish people. At all events, one thing is certain—namely, that that part of the united kingdom, the inhabitants of which are the most *ignorant*, is at the same time the most *disorderly*, and gives government the most trouble—and this is, to my mind, a very sufficient reason for disagreeing with our worthy clergyman, who is afraid that by extending knowledge you would extend vice.

Besides, sir, I am credibly informed that most of the Irish are *papists*—a circumstance which one would not believe but upon good authority, and unless it were to be accounted for in some rational way. Now, it appears to me, that the errors of Popery, as they may be traced to their origin in *ignorance*, and as they were strengthened and extended by *ignorance*, must owe their present feeble but lingering existence to the same cause. The monks and priests, as I have seen it observed in a book, knew so well the value of ignorance, that they would *not allow* the deluded people to read the scriptures; and it seems that many of the folks in Ireland are *not able* to read the scriptures, which, you know, comes to much the same thing. So firmly am I convinced of the power and sacredness of the Protestant faith, that I feel assured so many of the Irish are at this day Papists, only because they do not possess the same advantages in point of education that we do;—and I am apt to suspect, but I mention this with great diffidence, that our church wants no other assistance from our government, but what it would afford by protecting and encouraging popular institutions, for the extension of knowledge among all the subjects of this united kingdom.

It has been said, I know, that the poor, by being enabled to read, are rendered liable to be seduced by the Jacobin newspapers; but I look upon this, if I may be so bold as to say so, as a great reflection upon our rulers. I have heard, and do firmly believe, that there are laws by which all improper publications may be punished; and I hope the persons in power are not so remiss as to make no use of them when occasion requires it. It would indeed be a great pity if their mercy hindered their justice in this respect. I dare say, sir, you know better than me whether this be the case or not.

On the whole, then, I trust, that your readers will be of my opinion, although it is opposed to the wisdom and learning of our clergyman. It would indeed be mortifying, if to preserve virtue it were necessary to prevent knowledge; but it seems very strange to me that any one can believe the book of Proverbs to be inspired, and yet think to this effect. I earnestly pray, that the exertions both of Dr. Bell and of Mr. Lancaster may be encouraged, and that out of their rivalship may spring forth the fruits of peace and virtue.

Yours respectfully,

JOHN JONES,
Labourer.

ESSAY ON NOTHING.

Perhaps the following Essay from "Fielding's Miscellanies," may be considered as an answer to Query 29, "Required a logical definition of nothing."

D. C.

"It is extremely hard to define nothing in positive terms, I shall therefore do it in negative. Nothing then is not something. And here I must object to an error concerning it, which is, that it is in no place, which is an indirect way of depriving it of existence; whereas indeed it possesses the greatest and noblest place on this earth, viz. the human brain. But, indeed, this mistake has been sufficiently refuted by many wise men; who, having spent their whole lives in the contemplation and pursuit of nothing, have at last gravely concluded that there is nothing in this world.

"Further, as nothing is not something, so every thing which is not something is nothing; and wherever something is not, nothing is; a very large allowance in its favour, as must appear to persons well skilled in human affairs *. For instance, when a bladder is full of wind, it is full of something; but when that is let out, we aptly say there is nothing in it. The same may be as justly asserted of a man as of a bladder. How well soever he may be daubed with lace, or with titles, yet if he have not something in him, we may predicate the same of him as of an empty bladder. But if we cannot reach an adequate knowledge of the true essence of nothing, no more than we can of matter; let us, in imitation of the experimental philosophers, examine some of its properties or accidents. And here we shall see the infinite advantages which nothing has over something; for while the latter is confined to one sense, or two perhaps at most, nothing is the object of them all.

"For first, nothing may be seen, as is plain from the relation of persons who have recovered from high fevers: and perhaps may be suspected from some (at least) of those who have seen apparitions on earth, or in the clouds. Nay, I have often heard it confessed by men, when asked what they saw at such a place and time, that they saw nothing. Admitting that there are two sights, viz. a first and second sight, according to the firm belief of some, nothing must be allowed to have a very large share of the first; and as to the second, it has all entirely to itself.

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* The author appears to have overlooked the greatest superiority which nothing has over something in the following common observation: 'Nothing is certain!'—which cannot be predicated of something in every condition. D. C.

"Secondly, nothing may be heard, of which the same proofs may be given as of the foregoing. A strong instance of this is, the Argive mentioned by Horace, who, sitting in an empty threatre, imagined that he witnessed the performance of a play, and heard the applauses of the audience.

> Fuit haud ignobilis Argis,
> Qui se credebat miros audire tragœdos
> In vacuo lætus sessor, plausorque theatro.

"That nothing may be tasted and smelt, is not only known to persons of delicate palates and nostrils. How commonly do we hear, that such a thing smells or tastes of nothing? The latter I have heard asserted of a dish compounded of five or six savoury ingredients. And as to the former, I remember an elderly gentlewoman who had a great antipathy to the smell of apples, and who, upon discovering that an idle boy had fastened a mellow apple to her train, contracted a habit of smelling them whenever the boy came within her sight, though there were none then within a mile of her. Lastly, feeling; and sure, if any sense seems more particularly the object of matter only, which must be allowed to something, this does. Nay, I have heard it asserted (and with a colour of truth) of several persons, that they can feel nothing but a cudgel. Notwithstanding which, some have felt very bitterly the misfortunes of their friends, without endeavouring to relieve them. Now these seem two plain instances that nothing is an object of this sense. Nay, I have heard a surgeon declare, while he was cutting off a patient's leg, that he was sure *he* felt nothing. Nothing is as well the object of our passions as of our senses. Thus there are many who love nothing, some who hate nothing, and some who fear nothing. We have already mentioned three of the properties of a noun belonging to nothing; we shall find the fourth likewise to be as justly claimed by it; and that nothing is as often the object of the understanding as of the senses. Indeed some have imagined that knowledge, with the adjective *human* placed before it, is another word for nothing; and one of the wisest men in the world declared he knew nothing. But without carrying it so far, this I believe may be allowed, that it is at least possible for a man to know nothing. And whoever has read over many works of our ingenious moderns, with proper attention and emolument, will, I believe, confess that if he understands them right, he understands nothing. This is a secret not known to all readers, and the want of this knowledge has occasioned much puzzling; for when a book, or chapter, or paragraph, has seemed to the reader to contain nothing, his modesty has sometimes persuaded him that the true meaning of the author had escaped him, instead of concluding, as in reality the fact was, that the author in the said book did truly and *bonâ fide* mean nothing. I remember once, at the table of a person of great eminence, and one no less distinguished by superiority of wit than fortune, when a very dark passage was read out of a poet, famous for being so sublime, that he is often out of the sight of his reader; some persons present declared that they did not understand his meaning. The gentleman himself, casting his eyes over the performance, testified a surprise at the dullness of the company; seeing nothing could, he said, possibly be plainer than the meaning of the passage which they could not comprehend. This puzzled us all again to little purpose. We frankly owned that we could not find it out, and desired he would explain it. 'Explain it!' said the gentleman, 'why he means nothing.' In fact this mistake arises from a too vulgar error among persons unacquainted with the mystery of writing, who imagine it impossible that any one should sit down to write without any meaning at all; whereas, in reality, nothing is more common. For not to instance in myself, who have contentedly sat down to write this essay with nothing in my head, or, which is much the same thing, to write about nothing, it may be incontestably proved *ab effectu,* that nothing is more common among the moderns. The inimitable author of a preface to the posthumous Eclogues of a late ingenious young gentleman, says, there are men who sit down to write what they think, and others to think what they shall write. But indeed there is a third and a much more numerous sort, who never think, either before they sit down, or afterwards; and who, when they produce on paper what was before in their heads, are sure to produce nothing.

"Thus we have endeavoured to demonstrate the nature of nothing, by showing, first, definitively what it is not; and, secondly, by describing what it is. The next thing therefore proposed, is to show its various kinds. Now some imagine that these kinds differ in name only. But without endeavouring to refute so absurd an opinion, especially as these different kinds of nothing occur frequently in the best authors, I shall content myself with setting them down, and leave it to the determination of the distinguishing reader, whether it is probable, or indeed possible, that they all convey one and the same meaning. There are nothing *per se* nothing; nothing at all; nothing in the least; nothing in nature; nothing in the world; nothing in the whole world; nothing in the whole universal world; and perhaps many others of which we say—nothing."

HINTS TO THE CHARITABLE.

"When a man stretches out his hand in the street to ask alms, it is not enough to answer, 'Go and work.' We ought to be able to say, 'Come and work.' Unless there are establishments, where every necessitous individual may find, at all times, the offer of employment, at wages adequate to his mere subsistence, alms-giving is not a weakness, but a virtue."

What is the worst use to which a halfpenny so given is likely to be applied, suppose the receiver as idle, and as profligate, as imagination can figure? He will employ it, perhaps, as part of the purchase of a dram of gin. Even in this case, it will bestow ten or twenty minutes of imaginary health and luxurious excitement; the cares retreat, the hopes approach; sorrow has an interval of repose, and existence an interval of value. And if it is to be employed for purposes of real necessity, to defer the pawning of a blanket, or the hunger of a child—who would grudge—who would not volunteer the petty gift?

Begging is not so objectionable on its own account, as on account of the inequality of recompense with which it is attended. A good situation, a miserable appearance, will earn a little fortune for bustling worthlessness; while modest principle starves unheeded in pining humility. It was wise therefore in the catholics, to consolidate the fortunes of mendicants; to institute begging orders, to convene in one community the superannuated, diseased, and crippled outcasts of industry, and to license certain delegates of the distressed, to collect for the wants of the whole tribe of the helpless. Why not build convents or hospitories, in which those might be fed and clad, who, after due examination, are declared incapable of earning a subsistence? Why not permit certain members of these fraternities, or sisterhoods, to offer themselves at convenient places to the charitable passenger, and to bring home for the use of the household the result of a patient unobtrusive request? Begging has, in all ages and countries, so much abounded in thronged situations, that it may be considered as a necessary consequence of popular society, as a lesson of nature, as the appropriate form of providing for those whose labour has little or no exchangeable value. The eleemosynary rashness, which gives without enquiry, and without discrimination, is almost diffusive enough to maintain both the pretended and the real invalid. If the separation of these classes were intrusted to proper inspectors, no doubt enough might be collected to maintain all who ought to be tolerated as members of an order of mendicants. Piety has always delighted in the gratitude of mendicity, and christianity has commanded us to deserve it: there is a sort of irreligion in attempting its extirpation.

It is much to be lamented that this species of irreligion is on the increase, and that many of the best feelings of the heart, and those sympathies which dispose the passer by to stretch out an helping hand to a brother in distress, are weakened, if not altogether destroyed, by the existing system of poor-laws. It is this system which has placed a power of tyrannising over the wretched outcasts of society, into hands, too often indifferent to any one's wants but their own; and always too ready to exercise their "little brief authority," more according to the literal and exact construction of justice, than the mild and temperate interpretation of mercy and forbearance.

The unequal distribution of good, at least as far as respects that of an external worldly nature, forms part of the plans of the Creator of all, and is an admirable proof of his wisdom. Society, in no shape whatever, can exist without a gradation of ranks—this gradation gives scope to, nay is even the source from whence all the dispositions on the bright side of the human character arise; but the poor-laws prevent the exercise of these dispositions, they curb the emanations of benevolence, and in some degree counteract the designs of the author of nature. The eye that beholds not the distress which age and poverty create, will too often be accompanied by a heart unoccupied by any passion but self-love, and a hand shut close by the grasp of selfishness. The poor-laws withdraw objects really deserving of the exercise of benevolence from public view, and consequently tend to steel the heart, and debase the human character.

M. PHOSTON.

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GLEANINGS.

Poetical Moods and Tenses.

Let us examine the moods and tenses of the poets.

He who plays off the amiable in verse, and writes to display his own fine feelings, is in the sentimental or *indicative mood.* Didactic poets are in the *imperative,* satirists in the *potential,* your amourist in the *optative.* The classification is defective in the other moods.

The fame of those who write personal satire is in the *present tense*—that of most poets in the *imperfect,* the great ones who are dead, in the *perfect*—the great ones who are living must be content to have theirs in *the future.*

The Sphinx.

We believe the sphinx to be the symbol of the sun at the summer solstice, precisely at the point where the last degree of *Leo* meets the first degree of *Virgo.* The head of a woman, joined to the body of a lion, seems to justify this explanation of the symbol.—We should then place the sun at the summer solstice, when the zodiac was constructed, pretty nearly where he is now at the autumnal equinox.—*Edin. Review,* vol. xviii. p. 443.

Sun and Moon.

The sun of the Anglo-Saxons was a *female* deity, and their moon was of the *male sex.* The same peculiarity of genders obtained in the ancient northern language. *Edda Semundi, p.* 14. It is curious, that in the passage of an Arabian poet, cited by Pocock, in not. ad Carmen Tograi, p. 13, we meet with a *female sun* and *masculine moon.* The distich is

> Nec nomen femininum soli dedecus,
> Nec masculinum lunæ gloria.

In the Saxon treatise on the vernal equinox, we have the peculiar genders of these bodies displayed. "When the sun goeth at evening under this earth, then is the earth's breadth between us and the sun; so that we have not *her* light till *she* rises up at the other end." Of the moon, it says, "always *he* turns *his* ridge to the sun." "The moon hath no light but of the sun, and *he* is of all stars the lowest." Cotton MS. Tib. A. III. p. 63.

Hocus-Pocus and Old Nick.

These were two personages feared in the North, in whose names we may probably see the origin of the two expressions above. One was *Ochus Bochus*, a magician and demon; the other was *Neccus*, a malign deity, who frequented the waters. If any perished in whirlpools, or by cramp, or bad swimming, he was thought to be seized by Neccus. Steel was thought to expel him, and therefore all who bathed threw some little pieces of steel in the water for that purpose. Verel. Secio. Goth. p. 13.

Bear-baiting.

We may infer that bear-baiting was an amusement of some importance to our ancestors, as it is stated in Doomsday-book, among the annual payments from Norwich, that it should provide one bear, and six dogs for the bear.

Æsop's Fables.

It is not perhaps generally known that Maximus Planudes, a monk of the fourteenth century, was the writer of the Fables which pass under the name of Æsop,—the biography of that illustrious slave generally prefixed to the Fables, is also demonstrably the invention of this writer. Nothing can more strongly prove the natural ease and vivacity of style, by which these celebrated productions are distinguished, than the credulous acquiescence with which they appear to have been universally received as genuine till the seventeenth century. Then, indeed, father Vivasor made the fatal discovery, that Æsop, in his supposed life, is frequently made to quote Euripides, who was not born till near a century after his death; and that the Fables not only speak of the Piræus by a name which it did not receive till the days of Themistocles, but also anticipate the

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very words of a religious observation, which may be found in the 6th verse of the 4th chapter of St. James's Epistle.

Peg Tankards

were invented by the Saxon King Edgar, about the year 965 in order to repress drunkenness, at that time a vice of great prevalence. Drinking cups were ordered to be made of a specific size, and to have certain pins or pegs at stated distances down the side, and severe penalties were exacted of those who presumed to drink at one draught beyond a peg or mark.

Stratford-le-Bow

took its name from a stone bridge built there by Maud, queen to Henry I. This was the first stone bridge erected in England; and, says the old Chronicle, " because it was arched over like a bow, the town was afterwards called Stratford-le-Bow.

Armour in Churches.

" The custom of hanging up armour in churches," says Peter Pictaui (chancellor of Paris), " arose from the Danish king Canute refusing to wear his crown, after he had rebuked the flattery of his courtiers, but placed the same upon the head of the crucifix at Winchester, where it ever after remained."

Curious Grant by William the Conqueror.

" I William king, the third yeere of my raygne
Give to the Norman hunter, to me that art both life and deere,
The Hop and the Hopton, and all the boundes up and downe,
Under the earth to Hell, above the earth to Heaven,
From me, and from mine, to thee, and to thine,
As good and as fayre, as ever they mine were;
To witness that this is sooth, I bite the white wax with my tooth
Before Jugge, Mawde, and Margery, and my youngest son Harry,
For one bow and broad arrow, when I come to hunt upon Yarrow.

From an old MS. in the Library at Richmond.

Doomsday's Book.

"The boke of Bermondsey" says, "this boke was laid up in the King's Treasury, (which was in the churche of Westminster) in a place called Domus Dei or God's House, and so the name of the boke was therefore called Domus Dei, and since Domes-day."—*Howe's Chron. p.* 118.

Cardinal Wolsey's Present to Henry VIII.

"When Master Norris was returned, hee (the Cardinal) say'd unto him, I am sorie that I have no token to send to the king; but if you will, at my request, present the king with this poore foole, I trust hee will accept him; for hee is for a nobleman's pleasure, forsooth worth 1000 pounde: so Master Norris tooke the foole, with whome my Lorde was faine to send sixe of his tallest yeoman, to help him to convey the foole to the court; for the poore foole tooke on like a tyrant rather than hee would have departed from my Lorde, but notwithstanding they conveyed him, and so brought him to the court, where the king received him verie gladly."

The King's Mews,

so called, "for that the king's hawkes were there formerly *mewed* * and kept."

Derby, Sept. 7, 1811. CURIOSUS.

LITERARY MISCELLANIES.

TO THE EDITORS OF THE ENQUIRER.

GENTLEMEN,

SHOULD the following detached pieces of knowledge be deemed worthy insertion in the Enquirer, they shall be succeeded by others of the same nature.

Bocking Academy, Feb. 25, 1811. D. C—Y.

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* From the obsolete verb "to mew," signifying to shut up, to confine, &c. The word *mewing*, when applied to hawks, signified the casting of the feathers.

Galoshes. This word, though in common use, is not found in Johnson's Dictionary. It signifies outer shoes, which in walking are worn over dress ones, to keep them from the dirt. It is derived from the French *galoches,* which describes the same articles of wear.

Allodial, or free lands, is derived from *odhal,* implying freeholds in Norway; the first being merely a transposition of the syllables of the second. Hence *fee-odh, feodum, feudal,* denoting stipendiary property, a fee being a stipend.

Bumper, a corruption of *bon-pere, good-father* (i. e.) the pope, whose health was always drank by the monks in a full glass after dinner.

Coward. A feudal expression, implying *cowherd,* for which office a man void of courage was deemed only fit.

Poltroon, from *pollex truncatus.* The inhabitants of France in former days cut off their thumbs to avoid serving in the army. Hence the French word *poltroon* for coward.

Rap is a very old word in the laws of Canute, signifying robbery or rapine. Hence the expression, "*he snatches all he can rap and ran.*"

Soldiers I suppose derived from the circumstance of "some noblemen among the ancient Gauls being attended by a band of men, called *soldurii;* who devoted themselves to every hazard in defence of their patron."

The following quaint conceit of one of our old writers on *Queen Elizabeth and Sir Francis Drake,* is perhaps not generally known.

O nature, to old England still
Continue these mistakes;
Give us for our *kings* such *queens,*
And for our *dux* such *drakes.*

"Great cry and little wool." This proverb had its rise during the time that plays were performed in the open fields; when it was customary for the devil to appear in character on the stage, *shearing the bristles of swine.*

(*To be continued.*)

TO THE EDITORS OF THE ENQUIRER.

If any of your readers, or your friend Jasper Wormius, would communicate, through the medium of the Enquirer, a copy of Chaucer's Pilgrim's Tale, they would much oblige me. It begins,

> In Lincolnshire, fast by a fenne,
> Standeth a religious house—who doth it kenne?

I am informed, that it was inserted in Thynne's edition of Chaucer's works; and that it was more odious to the monks than the Ploughman's Tale.

Yours, &c.

March 21, 1811. HEREWARDUS DE BRUNNE.

THOUGHTS CONCERNING PROVIDENCE.

What strange notions are entertained concerning the Deity, his existence, and moral government of the world! It is the opinion of some, that the almighty Creator of the universe made all things perfect at the beginning, and having finished his work, left it, to rest from his labours; that, having established general laws, every thing is governed by those laws, both in the moral and physical world, and that he himself never interferes with either the universe or the ways of men. Others there are, who believe in what is called a particular providence, who believe that God directs and controls the actions of men, that he is the immediate cause of whatever comes to pass, and that the affairs of the world, respecting property, good or ill fortune, as it is called, respecting contingencies, sickness, and health; in short, every thing that concerns us here, is under his especial government. Those who hold the former opinion, ground it on the divine Omnipotence; those who maintain the latter, seem to rely more particularly on his goodness and fatherly care. Neither of these opinions are perhaps perfectly accurate; that he continues to act is extremely obvious, both from the general tenor of scripture, and the observations of philosophers; to men's natural wants he is always attentive; and for their personal comforts he continually provides, he looks with pity on the sick, and hears the lamentations of the wretched;—but that he miraculously interferes in every trifling affair, is extremely improbable, and what no reasonable creature can either believe or expect.

Some again maintain, that the divine Being must either exist from necessity, or else that he was his own creator; these opinions are both false; he is eternal, that is, he has existed from eternity. I would therefore ask *when*, or at what *time*, it was that he either created himself, or was created? The *act*, if it took place, must have been performed relatively to some time, however distant, for every act is performed in time; but the distance of that time, however long, is only a portion of eternity, and therefore, as he existed from eternity, he existed previous to time, and, *consequently*, such an act could not take place. If he existed from necessity, there would be a power in existence greater than himself, which is absurd, because, by hypothesis, he is the Omnipotent.

Newark, Nov. 20, 1811. CLERICUS.

SPRING.

BEHOLD! fair Aurora with her rosy fingers opens the gates of the east, and out sallies Spring in all the bloom of youth. Robed in the gayest colours, he comes from behind yon mountain. See how, at his approach, the snow which encircles its brow, divests itself of its inertness, flies through a thousand channels, and hastens to hide itself in the oceanic abyss. The plain spreads before this darling child of nature its carpet of lively green. The flowers, heedless of the destiny that dooms them to a transient existence, eagerly come forth to satisfy their curiosity, and then contentedly droop and die. Even the tender violet, forgetful of her native modesty, dares to peep out, and gazing wantonly on the stripling, seems to solicit a kiss from the object of her love. But foremost of all, the hasty primrose has strewed under his feet its tufted nosegays of variegated tints, whilst the cowslips, constant to their golden hue, express their admiration by undulating salutations.

Zephyr, no less anxious to join in the general homage, (but having no offering of his own) robs the flowers of their fragrance, and gently wafting the stolen treasure, perfumes the air breathed by the beloved youth. Hark! how the winged choristers tune their throats to welcome him. Behold the shrill lark, how she mounts to announce to the sky the glad tidings. Listen to the solitary thrush, how in broken, though sweet lays, she sings hymns in praise of the universal favourite; whilst the monotonous cuckow is heard at a distance. But Philomela, sensible of her superiority, scorns to mix in the motley concert of the day, and fashionably waits for the silent night to express, in the most enchanting melody, her rapture at his return. C. D. E.

TO THE EDITORS OF THE ENQUIRER.

The following observations, extracted from Dr. Trotter's Essay on Drunkenness, may perhaps be deemed a proper supplement to the essay on that degrading and disgusting vice, which appeared in your first number.

E. R.

"How far are the acts of the drunkard to be palliated?"

This is a point of great importance in civilized society: but it is not the province of the physician to decide with a legal view. Every human being, who was ever intoxicated, must have found, on reflection, that he had said and done things, which he would have neither thought of nor acted in a state of sobriety. The peace of his neighbour has, therefore, required that the drunkard should answer for his conduct. But it may be asked, ought a madman to answer for his deeds? The man who becomes mad from immoderate vinous potations, must be amenable to law, because that madness was of his own seeking.

Again, it may be said, that the drunken man, being as much in a state of delirium as any maniac, ought he to be punished for doing what he is unconscious of? Yes. But punishment might be mitigated here, if it shall appear that no preconceived malice had prompted him. This is, I think, what lawyers call *mal propense*

Were a man, during ebriety, to sign a deed, by which he should dispose of his property in an improper manner, to the injury of his family; query, would such a deed be legal? It might be deemed legal; but to me it would appear unjust to confirm it, because the man never formed such a resolution when he was in his senses. The acts of the drunkard, in this respect, ought not to be valid; for this plain reason: in the same condition he is not allowed to injure his neighbour, or society at large, with impunity; and therefore he ought not to be permitted to injure either his family or himself. All debts incurred, or money lost at play, in the state of intoxication, ought to be declared *null*, on the loser appealing in a proper manner when sober. This would prevent the gamester and systematic villain from taking advantage of the honest man, and would correct some of the greatest evils in the community.

When a drunken man is lavish of promises, which he never made when sober, be assured his kindness is not worth your thanks.

In how much is the drunkard guilty of suicide, who expires during the paroxysm, after the immoderate use of spirituous liquors?

When you hear a drunken man boasting of his generosity to his friends, beware how you receive a favour from that man.

When you hear a drunken man telling family secrets, whether of his own or those of other people, put that man down for a fool, and take care what you say in his presence.

When you hear a drunken man bragging of his courage, mark that man a coward.

When you hear a drunken man vaunting of his riches, be assured he cannot be estimable for his virtues.

When you hear a drunken man pitying misfortunes, which he did not relieve when sober, it is the strongest proof that he possesses no goodness of heart.

Receive no donations from a drunken man, lest he should ask them again when sober.

Avoid the company of a drunkard; for if he insults you, and you should insist on satisfaction, he will plead want of recollection, as apology.

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Let the sober man beware of the society of drunkards, lest the world should say, that he means to take an advantage of their credulity.

BRIEF ACCOUNT OF JOB HARTOP,

(FROM FULLER'S WORTHIES OF ENGLAND.)

"JOB HARTOP was (as himself affirmeth*), born at Bourn in this county, (Lincoln) and went anno 1568, (early days I assure you for the English in these parts), with Sir John Hawkins, his general, to make discoveries in New Spain; this Job was chief gunner in her majesty's ship called the Jesus of Lubeck, being the queen's by no other title, but was hired for her money, who in the beginning of her reign, before her NAVY ROYAL was erected, had her ships from the Hans Towns.

Long and dangerous was his journey; eight of his men at Cape Verd being killed, and the general himself being wounded with poysoned arrows, but was cured by a negro drawing out the poyson with a *clove of garlic,* enough to make nice noses dispense with the valient smell for the sanative vertue thereof.

He wrote a treatise of his voyage, and is the first I met with, who mentioneth that strange tree, which may be termed the *tree of food,* affording a liquor which is both meat and drink; *the tree of raiment,* yielding needles wherewith, and thread whereof mantles are made: *the tree of harbour,* tiles to cover houses, being made out of the solid parts thereof; so that it beareth a self-sufficiency for man's maintenance.

JOB was his name, and patience was with him; so that he may pass amongst the confessors of this country; for being with some other, by this general, for want of provisions, left on land, after many miseries they came to Mexico, and he continued a prisoner twenty-three years, *viz. two* years in Mexico, *one* year in the contractation-house in Cevil, *another* in the inquisition house in Triana, *twelve* years in the gallies, *four* years (with the cross of St. Andrew on his back) in the everlasting prison, and *three* years a drudge to Hernando de Soria; to so high a sum did the inventory of his sufferings amount.

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* In his Travels, inserted in Hackluit's Voyages, last part, page 487.

So much of his patience. Now see "the end which the Lord made with him." Whilst enslaved to the aforesaid Hernando, he was sent to sea in a Flemish, which was afterwards taken by an English ship, called the Galeon Dudley; and so was he safely landed at Portsmouth, December the second, 1590†; and I believe lived not long after." I. M.

CURIOUS ANECDOTES

OF THE

REV. JAMES BENSON,

RECTOR OF CROYLAND IN LINCOLNSHIRE, 1730 to 1761.

THE following curious particulars respecting this extraordinary character, were sent anonymously to Mr. Gough, and given in a note at p. 136*, of "the Appendix to his History of Croyland." This book is in the hands of very few people, the anecdotes (I think), are interesting to all; with this view I have transcribed them, and they are very much at the service of the Enquirer. R. W.

Peterbro' Nov. 4, 1811.

"There was a very extraordinary, and a very respectable character, who was rector of Croyland about twenty years ago, and well worth recording; his name was Benson. I fancy he was born blind, or at least had always a very imperfect vision; I think he told me he was educated at Wadham College; he appeared to be a good scholar, a man of excellent sense, modest, very agreeable and entertaining in company; and of irreproachable morals and conduct. He went through all the church service, even the first lessons, without the least hesitation; he had indeed a little boy in the desk with him to put him in, should he accidentally be out, but I never heard that he was so. He officiated twice for the clergyman where I lived, and where he was upon a visit. The first time I was confined to my bed and could not attend him, but heard great astonishment expressed at the elegance of his performance. When he came again, I took the liberty of asking him to officiate, that I might have the pleasure of hearing him. "Sir," says he, "it is as necessary for me to have my sermons written, as it is for those gentlemen who can see; but if it be possible, as the weather is fine, I will oblige you, and I will let your rector know to-morrow." This conversation was on the Friday; on the Saturday morning he got up at five o'clock, and walked with his little servant till breakfast, when he sent up word, that he would take the duty upon him. A better discourse, in language or matter, I never heard, nor did I ever hear the prayers uttered in a more edifying or engaging manner. After church, I took his little servant, a boy of about fourteen, in private, and asked him, "whether his master's sermon was new?" "Perfectly so, sir," said he; "I write all my master's discourses out for him, but this I never wrote, nor did he ever think of it till after he left you." "Your master told me," says I, "that when he wants to refer to a passage in the Greek Testament, he has taught you to read Greek so well as to understand it from your reading." "Oh sir, so he tells me, but I don't understand a word of it." "Pray do let me hear how you do it," says I, and gave him a Greek Testament. The boy took it, and read it so intelligibly, that I perfectly understood the meaning of the writer. Mr. Benson had lamented to me, as one of his greatest hardships, his inability to keep a good servant. He could not afford, he said, to give much wages, as his living was very small, not £80 a year, and he maintained his predecessor's widow and daughter; "so that," says the worthy man, "as soon as I have taught one of my parishioners to read well, and made him tolerably master of my method, he must leave me, to seek a more advantageous employment, and I have all the labour of instruction to go over again."

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† If Job left England in 1568, and returned in 1590, how could he be *twenty-three* years a prisoner? being absent from England altogether only *twenty-two* years. *Editor.*

This journey in the event proved fatal to the poor gentleman; he was going to visit a relation at Hamstead, and mounted upon a fine grey mare, which had carried him safely, he was boasting, many years, and which upon his journey he had been offered twenty guineas for; "but, sir," adds he, "a kingdom would hardly pay me the value of her." Upon his return back, about a month after, I saw him uneasy and dejected; for, alas, his mare was no more! she had been turned to grass with other horses, who had broke her leg, and made it necessary to dispatch her. He had another horse given him, it was true, but nothing like his old favourite. Some short time after, I heard this horse had started with him, flung him, and that his death was almost immediately the consequence of his fall.

TO THE EDITORS OF THE ENQUIRER.

THE following description of a subterranean spring, which discharges itself into the Larian lake, and the subsequent ingenious reasoning thereon, are contained in a letter from Pliny to Licinius; and, by your permission, are here submitted to the perusal of the readers of the Enquirer, in the hope that they will favour the public with their opinions, as to which is the most probable of Pliny's suppositions, or, what are the causes that produce the "regular" and surprising effects related by him.

CONTRIBUTOR.

PLINY TO LICINIUS.

"I have brought you, as a present out of the country, a query which well deserves the consideration of your extensive erudition. There is a spring which rises in a neighbouring mountain, and running among the rocks, is received into a little banquetting-room, whence, after being detained a short time, it falls into the Larian lake. The nature of this spring is extremely surprising; it ebbs and flows regularly three times a day. This increase and decrease are plainly visible, and very entertaining to observe. You sit down by the side of the fountain; and whilst you are taking a repast and drinking its water, which is extremely cool, you see it gradually rise and fall. If you place a ring, or any thing else at the bottom when it is dry, the stream reaches it by degrees till it is entirely covered, and then again gently retires from it; and this you may see it do for three times successively. Shall we say, that some secret current of air stops and opens the fountain-head, as it advances to and recedes from it; as we see in bottles, and other vessels of that nature, where there is not a free and open passage, though you turn their necks downwards, yet, the outward air obstructing the vent, they discharge their contents as it were by starts? Or, may it not be accounted for upon the same principle, as the flux and reflux of the sea? Or, as those rivers which discharge themselves into the sea, meeting with contrary winds, and the swell of the ocean, are forced back in their channels; so may there not be something that checks this fountain, for a time, in its progress? Or, is there rather a certain reservoir, that contains these waters in the bowels of the earth, which, while it is recruiting its discharges, the stream flows more slowly and in less quantity, but, when it has collected its due measure, it runs again in its usual strength and fulness? Or, lastly, is there not I know not what kind of subterraneous poize, that throws up the water when the fountain is dry, and repels it when it is full? You, who are so well qualified for the enquiry, will examine the reasons of this wonderful appearance; it will be sufficient for me, if I have given you a clear description. Farewell."

ANTIQUARIAN QUERIES.

If the readers of the Enquirer will explain the following passages, from different writers on ancient subjects, they will oblige PYTHON.

After the fire which destroyed the greater part of Croyland Abbey in 1091, Gough says, in his History of that place, p. 37, the monks supplied the loss of their bells and tower by two skillets (*skelettas*), given them by Fergus a brazier at Boston. *Query*, What are we to understand by a *skillet*?

In the enumeration of different trades and callings, as practised by our forefathers in England, we meet with the word "*loreiner*." Pray what trade was designated by this name?

In King Henry the Sixth's * instructions for building the King's College in Cambridge, he orders that in "the east ende of the same shall be a *window of nine dayes*, and betwixt every butterace a *window of five dayes*." What kind of windows were these?

In Howe's Chronicle, p. 431, it is said, "the Duke of Clarence after hee had offered his own *masse penie*, in the Tower of London, he made his ende in a vessell of malmsey." What are we to understand by the *masse-penie*?

In a old book relating to the building of the steeple of the church at Louth, in Lincolnshire, between the year 1500 and 1518, are the following curious entries.

"Robert Boston, for the Holy Ghost appearing in the Kirk-roof."......................	0	2	0
"Robert Boston for Holy Ghost..............	0	2	0
"Richard Boston for said Holy Ghost, as appears afore................................	0	0	20

How are these entries to be understood?

SOLUTIONS AND REPLIES

TO QUERIES PROPOSED IN THE PRECEDING NUMBER.

QUERY 20.

Miss Mary Ward, Burstwick, (aged 14 years), observes, that "a pronoun is defined by grammarians, to be a word used instead of a noun, to avoid repeating the same noun too frequently in a sentence: and as the pronoun is properly made to consist of three persons, *viz.* first, the person speaking; second, the

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* We shall gladly present our readers with the whole of this curious document, as promised by our correspondent, in a succeeding number of the Enquirer. *Editor.*

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person spoken to; and third, the person spoken of; we might therefore conclude, that nouns would likewise admit of three persons. But the only situation in which the noun can be used in the first person, is when the speaker or writer puts his own name for the nominative case to the sentence; or rather adds it by apposition to the nominative case already expressed; which is not often requisite, except where great punctuality is required, and the subject has not been previously introduced. We sometimes find this mode of speech in the Holy Scriptures: as "Then I, Daniel, looked, &c. Dan. chap. xii. ver. 5. But as expressions like this seldom occur, it seems unnecessary that we should distinguish a first person of the nouns: indeed, properly speaking, they will not admit of it; for in the sentence here quoted, the noun *Daniel* is only a repetition of the same nominative, and therefore either it or the pronoun is superfluous: but if the pronoun be expunged, the noun will become of the third person. But, though the nouns will not admit of a first person, that they are of the second person, when used in the vocative case, cannot be denied: for it is evident that when one person is addressing himself to another, or to an inanimate thing, the person or thing addressed must be of the second person, according to the definition of the pronoun given above. As, for example: "Solomon, my son, love thou the God of thy fathers;" "Ye winds that have made me your sport;" hence substantives are not always of the third person; but only so when spoken of, and of the second person spoken to, as defined by Mr. Murray. Therefore the definition stated in the query is incorrect.

Of the same opinion are *Miss A. Kemp, Mr. W. Philpott,* of Thaxted, and *Mr. J. E. Savage.*

QUERY 21.

Answered by Mr. D. Copsey, of Bocking.

The fact that a current is continually flowing from the Atlantic into the Mediterranean has been long established, and it was formerly supposed, that there was a subterraneous communication with the ocean, which took off the surplus water; but it has since been

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ascertained by Dr. Halley[*], that the water extracted from the Mediterranean in vapour, is more than sufficient to counterbalance the influx. For by experiment he found, that in a certain degree of heat, the 60th part of an inch of water is exhaled every two hours; and consequently, the 10th of an inch in 12 hours. Hence allowing the Mediterranean to be 40 degrees long, and 4 degrees broad at a medium, and consequently its whole surface 160 square degrees, it will in every twelve hours yield 5280 millions of tuns of water, whereas it receives from its nine great rivers, only 1827 millions of tuns per day, which is only $\frac{1}{3}$ of what is exhausted in vapours; so that were it not for the constant influx from the Atlantic, it would soon be rendered dry. And, indeed, its surface being lower than that of the ocean, as appears from the current, proves that no such subterraneous communication exists[†], for if this were the case, the Mediterranean must receive water from the ocean, in order to preserve a level.

Of this opinion are *Mr. A. Hirst*, of Marsden, and *Miss A. Kemp*, of Homerton.

I. H. N. near Leeds, observes, "It is well known that in some parts of the sea, there are currents running in different directions at the same time. This has been proved by an experiment which was made in the Baltic Sound some years ago. A pinnace with a few sailors on board, sailed into a strong mid-stream, and were immediately carried before the current with great velocity. They let down into the water a sort of basket, with a ponderous cannon shot in it, which immediately gave a check to the motion of the pinnace, and by sinking the basket to a greater depth, the boat was driven a-head to the windward against the current, which, previous to the basket being let down, carried the boat before it. On this principle (of under currents) the equality of the water in the Mediterranean sea is to be accounted for."

Mr. W. Putsey, of Pickering, observes, "that the subject of this query exhibits one of the most extraordinary appearances in nature; this large sea receiving not only the numerous rivers that fall into it, such as the Nile, the Rhine, and the Po, but also a very great influx from the Euxine sea on one part, and the ocean on the other; at the same time it is seen to return none of those waters thus received. Outlets running from it there are none; nor rivers, but such as bring it fresh supplies; no straits but such as are constantly pouring their waters into it. It has therefore been the wonder of mankind, in every age, how, and by what means, this vast concourse of water is disposed of; or how this sea, which is always receiving and never returning, is no way fuller than before. Many have been the opinions concerning it; but the most probable of them is that of Dr. Smith, who supposes a under current to be continually running, which carries as much water into the ocean, as the upper current carries from it. The Doctor's opinion has been further confirmed, by an experiment communicated to him by an able seaman, on board one of the king's frigates in the Baltic.

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[*] Philos. Trans.

[†] Ray.

Mr. John Baines junior, of Horbury Bridge near Wakefield, says, "Every time the tide flows, the water will undoubledly run through the straits of Gibraltar into the Mediterranean sea; but not in any sufficient quantity to cause a sensible tide, (though there must be some increase on the coasts of Spain and Morocco, but not on the Egyptian shores, and the Turkish Asiatic dominions;) because the inlet is indefinitely small in comparison with the whole surface of that extensive sea. But I cannot think, that during the ebbing of the tide, any water will run through the straits into the Mediterranean; on the contrary, it seems more probable, that the small quantity which ran in during the flowing, will then run back again into the Atlantic.

Nearly similar is the answer given by Mr. *J. E. Savage.*

QUERY 22.

No communications have been received relating to this query.

QUERY 23.

Mr. J. E. Savage observes, "I think there are five modes—*viz.* The indicative, the imperative, the potential, the subjunctive, and the indefinitive"—and adds, "of this opinion are Blair, Levett, and Murray, three of the best writers on the English language, that I have yet met with."

QUERY 24.

Mr. Savage is of opinion, that the rule in question is correct; he observes that Blair has given very nearly the same rule, but that Fenning says, "A great many things comprehended in one, ought rather to have the verb *is* than *are*" as, "A multitude *is* coming," "This people *is* a rebellious people."

Mr. Philpott also answered this query as follows: "Perhaps no better rule than Murray's can be given; yet respect is chiefly had to common usage. The following sentences are equally agreeable to the ear: "The committee *were* divided in *their* sentiments, and *they have* referred the business to the general meeting." "The committee *was* very full when this point was decided, and *its* judgment *has* not been called in question."

We may observe that whenever a question is asked, this distinction (regard to the import of the word) is not attended to; as, "what committee was it?"

QUERY 25.

Answered by Mr. D. Copsey.

Coats of arms, or armorial bearings, came into use in England in the reign of Richard I. and were hereditary in families in 1192. It was customary with the knights, to paint their banners with different figures to distinguish them in the crusades. Some say that they had their first origin, in the common custom of the ancient Germans painting their shields with various colours *. Others trace it higher, and say that they originated in the custom of the primitive people staining their bodies with different colours, to distinguish them from each other. Possibly it may have been derived from the idolatrous nations, who used to carry with them to war, standards bearing representations of their favourite gods. The standards of the different tribes of the Israelites, are also mentioned in the order of their marches, in the book of Numbers, second chapter; and the name Maccabee *, is said to be derived from the initials of the Hebrew words on their banners (Mi Kamoka Be Elim, Jehovah? Who is like unto thee among the gods, O Jehovah? Exod. xv. 11.)

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* Adams's Summary, p. 557.

In appropriating peculiar animals to the device, by which it was intended to celebrate any remarkable property in the person assuming armorial bearings, ideas were probably often taken from Scripture. In this manner the unicorn may have been assumed, as a supporter in the royal arms, from such frequent expressions in holy writ as the following: "My horn shall be exalted." "My horn shalt thou exalt like the horn of a unicorn." The following extract from the "Curiosities of Literature," will afford additional information on this subject. "Mr. Bruce in his travels observed in a cavalcade the head-dress of the governors of provinces. A large broad fillet was bound upon their forehead, and tied behind their head. In the middle of this was a horn, or a conical piece of silver, gilt, much in the shape of our candle-extinguishers. This is called *kirn* or *horne*, and is worn in reviews only, or public rejoicings for a victory. This custom, borrowed from the Hebrews, our traveller conceives, will explain the several allusions made to it in Scripture." Though it is, I believe, generally supposed that the unicorn is a fabulous animal, yet there are some circumstances which go to prove its real existence. Sparmann says that the figure of a unicorn has been found delineated by the Sinese Hottentots, on the plain surface of a rock in Caffraria, and therefore conjectures that such an animal, either does exist at present in the interior of Africa, or at least once did so. Father Lobo affirms that he has seen it: and Mr. Barrow, in his travels in Southern Africa, affords additional reason to believe in the existence of this curious animal †.

Miss A. Kemp (aged 14) says, "The lion is considered

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* This derivation of the name is objected to by some. See Whiston's Josephus, Antiq. lib. 12. c. 6. note.

† Encyclop. Britan. art. unicorn.

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as the symbol of royalty, and the unicorn of strength: the latter is mentioned as such in the Scriptures.

QUERY 26.

Answered by Mr. D. Copsey.

Idolatry was the peculiar sin of the Israelites. They discovered this propensity soon after their deliverance from Egypt, for when Moses went up the mount to receive the law, and staid there forty days, they set up a molten calf as a representation of God's presence to go before them. The reason why they chose this shape might possibly be because they had seen it in Egypt, the bull being a symbol of the Egyptian god Osiris or Apis. In imitation of which also, Jeroboam afterwards set up the golden calves in Dan and Bethel *. The proneness of the Israelites to idolatry, prior to the Babylonish captivity, may be attributed to their intermarriages with the inhabitants of Canaan, contrary to the express commands of God; who also, in warning them against such a connection, declared to them the danger they would be exposed to of imitating their corrupt manners. And in the moral law delivered to them, God in the first place guarded them against idolatry: "Thou shalt have no other gods before me," &c. for they were chosen as a peculiar people, in order that the true worship of God might be preserved in the world, which was overrun with idolatry. That the Jews should be more cautious, in abstaining from the worship of false gods after their return from bondage, is not surprising, since they had then experienced the severe anger of God, inflicted on them for this sin. It should also be remembered, that the tribes of Judah and Benjamin only were carried to Babylon, and after 70 years captivity, permitted to return according to the promise of God by the prophet Jeremiah: and among these tribes, particularly the former, there were always a great number who adhered to the true worship of God. It appears that on this account, the tribe of Judah was chosen to preserve a name to David until the Messiah came, who was lineally descended from that royal house. The great body of the ten tribes, or of the kingdom of Israel, who under Jeroboam revolted from the house of David, were carried captive by the Assyrians under Shalmaneser, in the days of Hoshea, about 115 years before the captivity of Judah, and never returned; but their country was possessed by those whom the Assyrian kings sent thither, called Cutheans, but afterwards named Samaritans, from Samaria, the chief city of that country. Hence, probably, arose the animosity which existed between the Jews and Samaritans, a remarkable instance of which is mentioned in St. John's Gospel, 4th ch. 9th ver.

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* Collyer's Sac. Int.

To the same effect, were communications received from *Mr. J. Baines,* and *Mr. J. E. Savage.*

QUERY 27.

Answered by Mr. A. Nesbit, of Farnley near Leeds, author of the Practical Land Surveying for the Use of Schools.

The method of writing from the bottom of the page towards the top, in entering the field-notes, was, I believe, first published in the year 1795, in Dr. Hutton's Mathematical Dictionary. It was communicated to him by Mr. John Rodham, of Richmond in Yorkshire; and evidently possesses many advantages, both with regard to brevity and perspicuity, over any other that has yet been made public.

The middle column is considered to represent the chain-line; and the crossings of fences, brooks, &c. are denoted by lines drawn across the middle column, or part of right and left hand columns, opposite the distances on the chain-line, at which they are crossed; and the corners of fields and other remarkable turns in the fences, to which offsets are taken, are defined by lines joining or lying in the same relation to the middle column, as the fences, &c. do to the chain-line. Thus a tolerably accurate representation of the fences, &c. may be sketched in the field, which will very much assist the surveyor in drawing the place.

Those surveyors who are in the habit of writing from the top of the page towards the bottom, must, I am persuaded, find considerable embarrassment, not only in sketching the fences in the field, but also in laying down their lines upon the plan; as, in this case, the notes are diametrically opposite to the direction in which the survey is taken. In short, the method of writing, from the bottom of the page towards the top, so far transcends every other with which I am acquainted, that, in my opinion, it needs only to be known to be approved; and I have no doubt but that it will, in a short time, be universally adopted.

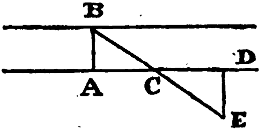
"*A Contributor,*" and *Mr. John Johnson,* Land-surveyor of Miltham near Huddersfield, expressed similar opinions.

Query 28.

Mr. Arthur Hirst says, "I think the most simple method of doing this without any apparatus, is by standing as erect and steady as possible, and pulling down the brim of the hat until some object on the other side of the river just appears in view, then turning on one side, and fixing the eye on some object on the same level with the former; having strided or measured the distance between the place of observation and this last object. I have very often found it give me the breadth of the river with astonishing exactness. I should have called this my own invention, had not I mentioned it to a friend a few days ago, who told me it was not new, and showed it me in a small book entitled, "The Grammar of Geometry."

A similar answer was received from *Mr. Putsey,* the proposer.

Mr. Nesbit communicated the following method: Let A B denote a section of the river, and make A C = C D, erect D E perpendicular to A D, and when you have arrived at the point E, in a direct line with B C, the distance D E will be equal to A B, the breadth of the river; for the triangles A B C, C D E are evidently similar and equal. If A C be not made equal to C D, the breadth of the river may then be obtained by similar triangles.



Mr. John Baines also favoured us with a very ingenious solution to this query.

QUERY 29.

Vide " Essay on Nothing," inserted in this number.

QUERY 30.

Mr. J. Baines observes, that " poetical expressions generally strike an audience more forcibly than prose compositions. The most uncultivated man will listen with attention to a poetical harangue; and the man of learning is charmed with the noble, energetic, and figurative expressions which constitute the soul of poetry. Prose language is too common and plain for public entertainment, especially where motion is requisite in exhibition; for who can address an audience with a graceful and becoming air, unless the strength of the narrative prompt him to it? Therefore, in my opinion, blank verse is more suitable for dramatic composition than prose."

QUERY 31.

Answered by Mr. Michael Harrison, of Crosland, near Huddersfield.

Probably in heating iron red hot, a portion of carbon from the fire combines with it. If cooled again in the atmosphere, the carbon flies off in carbonic acid gas, and the iron is as soft as before; but, if it be immersed in water while ignited, it suddenly checks the dissipation of the carbon, decomposes the water by taking its oxygen from it, and renders the iron, or more properly the subcarburet of iron, more hard and brittle.

In my opinion, the soft and hard qualities of metals are owing to their different capacities for caloric; that which has the greatest capacity being the softer metal. Copper, when allowed to cool slowly in the atmosphere, assumes a crystaline form, and, according to Abbé Mongez, in quadrangular pyramids; the surface becomes oxidized, the oxide combines with carbonic acid gas, and makes the outside more hard and brittle. See Dr. Thomson's Chemistry, and vol. iv. p. 8, of Montucla's Recreations, translated by Dr. Hutton.

Copper in heating cannot obtain carbon from the fire, as it cannot be artificially combined with it. Copper is incapable of decomposing water, even at a red heat; it cannot, therefore, in cooling, take oxygen from the water when immersed in it. If copper and carbon would unite, we might suppose, from analogical reasoning, that the composition would be as hard and brittle as sulphuret and phosphuret of copper. In such a combination probably they would, when red hot, decompose water, get oxygen from it, and become hard and brittle in sudden cooling; but the reverse is the case.

When the red heat of copper is suddenly carried off by water, or any other cold liquid, it stops the crystals from being so firmly inserted into one another, as they would be if they cooled slowly in the atmosphere. Thus, sudden cooling gives copper a greater capacity for caloric than slow cooling, which is the reason why copper is softer when cooled in a cold liquid than in atmospheric air.

QUERIES PROPOSED FOR DISCUSSION

IN THE SIXTH AND SUCCEEDING NUMBERS.

1 Qu. (32) *By Mr. M. Harrison, Crosland, near Huddersfield.*

Why will not wax convey the electric fluid equally as well as iron?

2 Qu. (33) *By the same.*

In what respects is a philosopher superior to a clown, supposing their situation in life to be equal?

3 Qu. (34) *By the same.*

Does fear cause the hair to stand erect? if it does, what is the reason?

4. Qu. (35) *By J. H. N. near Leeds.*

From whence proceeds the sweet and glutinous fluid, generally termed "honey-dew," which is frequently found on the foliage of trees during the summer-months?

5 Qu. (36) *By the same.*

Where did the barbarous, and savagely cruel, practice of cock-fighting originate?

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6 Qu. (37) *By the same.*

There is an apparent inconsistency in the two following passages: according to St. Matthew the woman whose daughter "was vexed with a devil," was a native of *Canaan*. Matt. chap. xv. 22. In St. Mark's Gospel it is said she was a *Syrophenician*. Mark, chap. vii. 26. How is this seeming contradiction to be reconciled?

7 Qu. (38) *By Mr. A. Hirst, of Marsden.*

The manufacture of cotton has of late years been so much improved, that cotton yarn has been introduced into silk articles, and made to pass for silk, to which it bears so close a resemblance, as almost to deceive the best judges—required an easy and practical method of detecting this piece of ingenious fraud?

8 Qu. (39) *By Mr. J. Baines, jun.*

It is remarked that from the creation of the world to the present time, the length of the life of man, and also his bodily strength, have been continually diminishing. How is this to be accounted for?

9 Qu. (40) *By the same.*

What is the meaning of the word "Urim," mentioned 1 Sam. xxviii. 6.?

10 Qu. (41) *By Mr. M. Phoston.*

Are what are called *reason* in man, and *instinct* in the animal creation, different principles, or are they one and the same, differing in degree only?

11 Qu. (42) *By Mr. J. C., Boston.*

Is commerce or agriculture the greater advantage to this country?

POETRY,

ORIGINAL AND SELECT.

SONG,

ADAPTED TO A FAVOURITE WELSH AIR.

Ev'NING zephyr, wildly floating,
Whisper my love!
Paint my heart with passion doating,
Whisper my love!
Breathe thy murmurs, falt'ring, dying,
Prompt the tender wish complying,
Bid her think that I am sighing,
Whisper my love!

Idle streamlet, gently gliding,
Whisper my love!
With soft fall, indiff'rence chiding,
Whisper my love!
As she views thy current going
O'er thy channel, brightly glowing,
Bid her think my tears are flowing,
Whisper my love!

Willow, drooping o'er the fountain,
Whisper my love!
Absent moments say I'm counting,
Whisper my love!
Rust'ling midst the moon-beams shining,
As thy branches wave reclining,
Bid her think 'tis me repining,
Whisper my love!

Flitting bat, on night-wind flying,
Whisper my love!
Say that I, through scorn, am dying,
Whisper my love!
As thy faint form flutters over,
While deep gloom the world doth cover,
Say my spirit soon shall hover,
Guarding my love!

Stamford. I. S.

*ON THE KING'S ILLNESS**.

" Rest, rest afflicted spirit; quickly pass
Thy hour of bitter suffering! rest awaits thee,
There, where, the load of weary life laid down,
The peasant and the king repose together.
There peaceful sleep, thy quiet grave bedew'd
With tears of those who loved thee—Not for thee,
In the dark chambers of the nether world,
Shall spectre kings rise from their burning thrones,
And point the vacant seat, and scoffing say,
' Art thou become like us?' Oh! not for thee:
For thou hadst human feelings, and hast walked
A man with men, and kindly charities,
Even such as warm the cottage hearth, were thine,
And therefore falls the tear from eyes not used
To gaze on kings with admiration fond:
And thou hast knelt at meek religion's shrine
With no mock homage, and hast owned *her* rights
Sacred in every breast; and therefore rise
Affectionate, for thee, the orisons
And mingled prayers, alike from vaulted domes
Whence the loud organ peals, and rafter'd roofs
Of humbler worship; still, remembering this,
A nation's pity, and a nation's love
Linger beside thy couch, in this the day
Of thy sad visitation, veiling faults
Of erring judgment, and not will perverse.
Yet, oh that thou hadst closed the wounds of war!
That had been praise to suit a higher strain.
—— Farewell, the years roll'd down the gulf of time!
Thy name has chronicled a long bright page
Of England's story, and perhaps the babe
Who opens, as thou closest thine, his eyes
On this eventful world, when aged grown,
Musing on times gone by, shall sigh and say,
Shaking his thin grey hairs, whitened with grief,
' Our father's days were happy!'—Fare thee well!

---

* These beautiful lines are extracted from the Monthly Repository for October.

My thread of life has even run with thine
For many a lustre, and thy closing day
I contemplate, not mindless of my own,
Nor to its call reluctant."

A. L. B.

LINES

WRITTEN ON A BLANK LEAF OF CHARLOTTE SMITH'S POEMS.

Whence are those strains that to the midnight air
  Responsive echo Philomela's woe,
Soothing the rugged brow of wan despair
  To soft repose? And can they not bestow,
Sweet songstress, one alleviating charm,
  To still the breast whence their sweet sorrows flow?
Yet though the human lyre affords no balm
  T' allay the griefs thou hast endured below,
Thy faithful guide, religion! steadfastly
  Points to the courts where concerts ceaseless chime,
In concord sweet of heavenly melody:
  Partaking happiness to dateless time,
  May thy soul rest in that bright sphere sublime,
Beyond th' oppressor's scourge, the proud man's contumely.

G.

LINES

WRITTEN DURING A SEA-STORM. 1811.

Behold, where from yon low'ring cloud
  The winged lightnings swiftly fly;
And hark! the thunder, pealing loud,
  Re-echoes through the vaulted sky!

Behold each undulating wave
  Is crested with the whit'ning foam;
And murmurs yon drear rocks to lave,
  Or o'er the sandy beach to roam!

See where, with harsh discordant cry,
  The sea-mews cleave the lurid air,
And as from cliff to cliff they fly,
  Seem of the coming storm aware.

No other sound attention draws,
But every breeze is hush'd and still;
All nature makes a solemn pause,
A pause portentuous of ill.

But hark! in one tremendous crash
The briny waves, impetuous driv'n,
Against the shore with fury clash,
Impell'd by every wind of heav'n.

Soon back with dire commotion roll'd,
They in the deep embosom'd lie,
Then swift their ponderous size unfold,
And foaming seek the blacken'd sky.

Should such a scene, when woe betides,
Present its dread terrific form,
Then raise thy soul to him who rides
The whirlwind, and directs the storm.

J. X.

LOVE.

COMMUNICATED BY MR. C. DE WEIGHT, PARSON-DROVE.

Love is honey mix'd with gall,
A thraldom free, a freedom thrall,
A bitter sweet, a pleasant sour,
Got in a year, lost in an hour;
A peaceful war, a warlike peace,
Whose wealth brings want, whose wants increase,
Full long pursuits, and little gain,
Uncertain pleasure, certain pain;
Regard of neither right or wrong,
For short delights, repentance long.

Love is a sickness of the thought,
Conceit of pleasure dearly bought,
A restless passion of the mind,
A labyrinth of errors blind;
A sugared poison, fair deceit,
A bait for fools, a furious heat,
A chilling cold, a wondrous passion
Exceeding man's imagination,
Which none can tell in whole nor part,
But only he that feels the smart.

1736,

TRANSLATION AND IMITATION

OF A LATIN POEM.

Supplement, Vol. IV. P. 320. Poetical Magazine.

On rural themes my muse delights to dwell,
Of sylvan gods and rustic honours tell;
Where shepherds gaily chant melodious strains,
And sweetly with their music cheer the plains.
Observe the fields with waving corn replete,
And orchards furnish a delicious treat;
With grapes high flavour'd, lo! now teems the vine,
Busy the peasants, and the weather fine;
The warbling songsters make the groves resound,
And all is plenty and delight around.
But ah! too soon will autumn quit the field,
And her blithe reign to dreary winter yield;
Boreas will bellow from the surly north,
And show'rs of hail and snow come rushing forth;
The birds sit moping on the naked trees,
Their plaintive wailings wafted on each breeze.
But, soon will spring in beauteous form appear,
That most delightful season of the year;
Yes, flow'ry spring will come with graceful mien,
And hill and dale be dress'd in living green;
Sweet odours, borne on zephyr's silken wing,
Shall hail the first approach of welcome spring:
All hail! thy yearly honours shall be paid
By each blythe rustic swain, and village maid;
Amid the roseate bow'r, with flutt'ring wing,
At dewy eve the nightingale shall sing;
Sweet violets, lilies, roses smile around,
And a rich verdure clothe the fertile ground.
Whilst fortune smiles, enjoy, with thankful heart,
Spring's short-liv'd pleasures, which must soon depart;
Yes, pass the happy day devoid of sorrow,
Nor wish, too deep, to pry into the morrow.

J. BROWN.

Surfleet, May 11, 1811.

ADDRESS TO MY FIRST GRAY HAIR.

BY MR. THELWALL.

" And thou hast chang'd thy hue, companion staid,
Of forty varying years; thy darkest brown
Shifting to silvery whiteness. Be it so:
It is not the first time that I have met
An old acquaintance with an altered face,
And 'twill again betide me: or the wheel
Of ever giddy Fortune must forego
Her old propension, and no more invert
My oft deluded hopes. But, of thy kind,
Not Fortune's steadiest favour, nor her hate,
Can stay the destin'd course. Mute monitor!
Thou art, indeed, but as the harbinger
Of many a change approaching; that shall soon,
To all thy numerous tribe impart thy hue:
Dappling at first with many a wintry spot,
Till all is equal snow.
                                        Well! my firm mind,
That many a less expected change hath borne,
Can bear that also.
                                        Hovering Winter, hail!
Hail to thy wrinkled front, and hoary brow!
Not from thy reverend aspect do I shrink,
Season of waning life! if that thy snows,
Incrusting all without, leave yet within
The genial warmth of friendship; or if thou bring
(So winter should) the calm and social joy,
Of dear affiance, and communion sweet,
With few congenial minds, and not withhold
Quiet and competence, respect and love,
And literary leisure: if o'er all,
Thou not refuse to them, my infant buds,
(The hope and promise of a future spring)
Kindly protection from the ruffian blasts
Might mar their tender germs.
                                        Oh! give me yet,
Ere dull inaction freeze the torpid vein,
Or numbing languor cramp the vital powers
Of sedulous efforts; give me yet, to rear

The sheltering fence of competence, to guard
These from the blight; and I will not repine,
That nature's wheel revolves; I will not mourn,
My spring of storms, my summer overcast,
Or toils autumnal, that the wayward year
Strive to repair; but the last wintry hour
Accept as nature's boon: and even then,
When thy dim twilight, o'er the studious eye
Steals darkling, and the tottering step foregoes
The pride of wonted firmness, will I bend
My unrepining weight; if haply propt
Upon the matron arm of her belov'd!
My faithful stay through every woe of life!
Or on the filial shoulder rest awhile
My waning strength, that each successive day
Counts by some new privation; till at length,
(Each function and each duty all fulfill'd)
Pleas'd with the thought I have not liv'd in vain,
I lay me down; and on the quiet couch
Of unreproving conscience pillowing me,
Welcome my doom; and, smiling, sink to rest."

Mathematical Department.

MATHEMATICAL QUESTIONS

IN NO. IV. ANSWERED.

1. Qu. (31) *answered by Mr. T. Ford, Owstwick.*

Put x = number of gallons at first, then $\frac{x-10}{3}$ = what the officer seized; and £9. 18*s.* — £8. 2*s.* = £1. 16*s.* is their value; therefore, x : £9. 18*s.* :: $\frac{x-10}{3}$: £1. 16*s.* Now multiply means and extremes, by reduction $x = 22$, and 9*s.* is the price per gallon.

True answers were also sent by *Messrs. Anglicus, J. Baines, B. Brooke, W. Bruster, W. Dunn, J. Gawthrop, A. Hirst, W. Harrison, J. Hine, Lucinda, R. Maffett A. Nesbit, Philpot, Rylando, J. Tomlinson,* and *J. Winward.*

2. Qu. (32) *answered by Mr. W. Bruster, Donnington.*

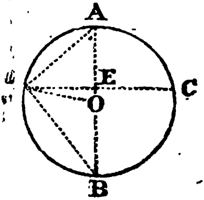
By the nature of compound interest as 100 : 100 + $2x$ :: 1 : $\frac{100+2x}{100}$ = the amount of £1. for one year. Consequently $x \times \left(\frac{100+2x}{100}\right)^{3x}$ = the amount of x pds. at $2x$ per cent. for $3x$ years, and $x \times \left(\frac{100+2x}{100}\right)^{3x}$ = $5x$ by the question; hence $\left(\frac{100+2x}{100}\right)^{3x} = 5$, and extracting the cube root $\left(\frac{100+2x}{100}\right)^{x} = 1.709976$, from whence, by trial and error, x comes out = 5.312728 = the principal sought.

The same by Mr. J. Baines, jun. Horton Bridge.

By the question, $(1+.02x)^{3x} \times x = 5x$, or $(1+.02x)^{3x} = 5$, whence $3x \times \log.\ (1+.02x) = .69897$, and by approximation $x = 5.3127$.

Other solutions were sent by *Messrs. Anglicus, Dunn, Ford, Gawthrop, Hine, Hirst, Marrett, Nesbit, Putsey, Rylando, Tomlinson,* and *Winward.*

3. Qu. (33) *answered by Anglicus, and Mr. Bruster.*



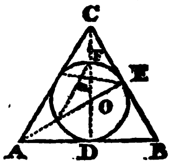
Put the versed sine AE = 50 = a, and DE = x; then DA = $\sqrt{(AE^2+DE^2)} = \sqrt{(a^2+x^2)}$. Also AE = a : AD :: AD : AB = $a + \frac{x^2}{a}$ = the diameter. Now, by mensuration and the question, $\frac{8\sqrt{(a^2+x^2)}-2x}{3} = 160$, and by reduction $60x^2 - 1920x = 70400$, from whence x = 53.806525, and AB = $a + \frac{x^2}{a}$ = 107.90284265 is the diameter required.

Otherwise by Mr. Ford, and Mr. J. Gawthrop.

Put the chord subtending the given arc $= 2x$, $v = 50$, and $a = 160$; then by known rules $\frac{8\sqrt{(x^2-v^2)}-2x}{3} = a$, whence $x = \sqrt{\left(\frac{9a^2-64v^2}{60}+\frac{a^2}{100}\right)}+\frac{a}{10} = 53.806$; whence $\frac{x^2}{v}+v = 108$ nearly.

In the same manner the question was answered by *Mr. Baines, Mr. Dunn, Mr. Hine, Mr. Hirst, Mr. Maffett, Mr. Nesbit, Rylando, Mr. Tomlinson,* and *Mr. J. Winward.*

4. Qu. (34) *answered by Mr. Putsey, and Rylando.*



Let DEF be a section of the given sphere, and ACB a section of the circumscribing cone. Put $OD = r$, and $CD = x$; then $CE = \sqrt{(CD \times CF)} = \sqrt{(x^2 - 2rx)}$, and by similar triangles $CE : EO :: CD : DB = \frac{rx}{\sqrt{(x^2-2rx)}}$; therefore, $\frac{4r^2x}{x^2-2rx} \times \frac{x}{3}$ by the question is a minimum, which in fluxions, and reduced, we get $x = 4r$; hence $AB = 4\sqrt{2}$, and the solidity of the cone $= 32 \times 8 \times .2618 = 67.0208$, as required. Cor. The sphere is to its least circumscribing cone as 1 to 2.

The same by Messrs. Bruster, Dunn, Hirst, and Nesbit.

Let DEF be a section of the sphere, and ACB that of the cone, which will be the least when $Cn = 2nD$, or $Dn = 2nF$; therefore, $2FD = 8 = CD$, and $CE = \sqrt{(CO^2 - EO^2)} = \sqrt{(36-4)} = 5.6568542$, which is also $= AB$, the base of the cone; hence its solidity is easily found $= 67.0208$; whence it appears that the solidity of the cone is $=$ twice that of the sphere.

Answers to this question were sent also by *Anglicus, Mr. Baines, Mr. Ford, Mr. Gawthrop, Mr. Hine, Mr. Maffett, Mr. Tomlinson,* and *Mr. Winward.*

5. Qu. (35) *answered by Mr. Bruster.*

In printing this question an error has crept into the enunciation by substituting the word *digits* for *numbers*. After rectifying this error the solution may be as follows:

Let a^2 be the given square, and x the less number; then, $a^2 - x$ will be the greater. But, by hypothesis, $a^2 - 2x = \sqrt{a^2} = a$, and $\frac{x}{a^2 - 2x} + \frac{a^2 - x}{a^2 - 2x} = \frac{a^2}{a^2 - 2x} = a$; in each of these equations $x = \frac{a^2 - a}{2} =$ the less number, and $\frac{a^2 + a}{2}$ is the greater. Hence, if the given square be 1, the required numbers are 1 and 3; to the given square 4, the numbers are 3 and 6, &c.

By assuming data to render the question possible, answers to this question were transmitted by *Messrs. Baines, Dunn, Ford, Hine, Hirst, Maffett, Nesbit, Rylando, Tomlinson,* and *Winward.*

6. Qu. (36) *answered by Lucinda and Rylando.*

Let $x, y,$ and z, denote the numbers required, and let $a^2 =$ their sum; then, by the question $x + y - z = a^2 - 2z = v^2$ by assumption, also $x + z - y = a^2 - 2y = n^2$, and $y + z - x = a^2 - 2x = m^2$; hence, $x = \frac{a^2 - m^2}{2}$, $y = \frac{a^2 - n^2}{2}$, and $z = \frac{a^2 - v^2}{2}$; therefore, $x + y + z = \frac{3a^2 - m^2 - n^2 - v^2}{2} = a^2$, or by reduction, $a^2 = m^2 + n^2 + v^2$, which assume $= (m + s)^2 = m^2 + 2ms + s^2$; then $2ms = n^2 + v^2 - s^2$ and $m = \frac{n^2 + v^2 - s^2}{2s}$. Take $n = 4$, $v = 6$, and $s = 2$; then $m = 12$, and $a^2 = 196 = 14^2$, $x = 26$, $y = 90$, and $z = 80$.

Otherwise by Mr. J. Hine and Mr. Maffett, Plymouth.

Let $x, y,$ and z, be the three numbers required, then, by the question, $x + y + z = a^2$, $x + y - z = c^2$, $x + z - y = d^2$, and $y + z - x = e^2$; now by adding the three last equations, we get $x + y + z = c^2 + d^2 + e^2$, which must be a square, because its equal a^2 is a square; to make $c^2 + d^2 + e^2$ a square, assume it equal $(c + d)^2 = c^2 + 2cd + d^2$, from whence c or d may be found, viz. $c = \frac{e^2}{2d}$; where e and d may be any numbers at pleasure, so that e^2 be but divisible by $2d$. Take $e^2 = 64$, and $d = 2$, then $c = 16$, consequently $a^2 = 324$ is a square, and by subtracting the three last equations severally from the first, we obtain $z = \frac{a^2 - c^2}{2}$, $y = \frac{a^2 - d^2}{2}$, and $x = \frac{a^2 - e^2}{2}$, and the three numbers are 34, 130, and 160, which answer the conditions of the question.

Again by Messrs. Ford, Putsey, and Winward.

Put x, y, and z, for the numbers required, and by the question we have $x + y - z = a^2$, $x + z - y = b^2$, and $y + z - x = c^2$; the sum of these three equations gives $x + y + z = a^2 + b^2 + c^2$, which is also to be a square, by the question; assume it $= (a + n)^2 = a^2 + 2an + n^2$, and we find $a = (b^2 + c^2 - n^2) \div 2n$, where b, c, and n may be any numbers at pleasure. Let $n = 2$, $b = 8$, and $c = 10$, then $a = 40$, and if from the fourth equation we subtract the three first severally, we obtain $x = \frac{a^2 + b^2}{2} = 832$, $y = \frac{a^2 + c^2}{2} = 850$, and $z = \frac{b^2 + c^2}{2} = 82$, which are three numbers that will answer, and other answers may be found by taking other even numbers for n, b, and c.

It was answered also by *Anglicus, Mr. Baines, Mr. Gawthrop, Mr. Hirst, Mr. Nesbit, and Mr. Tomlinson.*

7. Qu. (37) *answered by Mr. Nesbit, Farnley.*

Let x^2, $25x^2$, and $49x^2$ denote the numbers sought, then the sum of their square roots is $= 13x$, which is to be both a square and a cube by the question; put $13x = p^6$, and we have $x = \frac{p^6}{13}$, where if $p = 13$, we find $x^2 = 13^{10} = 137858491849$, $25x^2 = 3446462296225$, and $49x^2 = 6755066100601$, which answer the conditions required.

It was answered in exactly the same manner by *Messrs. Anglicus, Baines, Ford, Gawthrop, Hine, Hirst, Lucinda, Maffett, Putsey, Rylando, Tomlinson,* and *Winward.*

8. Qu. (38) *answered by Rylando, and Mr. A. Hirst.*

Let the roots of the required squares be denoted by $\frac{1}{4} - x$ and x; then by the question $(\frac{1}{4} - x)^2 + x = x^2 + \frac{1}{2}x + \frac{1}{16}$, and $x^2 - x + \frac{1}{4}$, are squares, and we have only to make $(\frac{1}{4} - x)^2 - x^2 = \frac{1}{16} - \frac{x}{2}$ a square; assume it $= n^2$; then $x = \dfrac{1 - n^2}{8}$, and $\frac{1}{4} - x = \dfrac{1 + n^2}{8}$; where n may be taken at pleasure, provided it be less than unity. If $n = \frac{1}{2}$, then $x = \frac{3}{32}$ and $\frac{1}{4} - x = \frac{5}{32}$; when $n = \frac{1}{3}$, then $x = \frac{1}{9}$ and $\frac{1}{4} - x = \frac{5}{36}$; and so on.

Otherwise by Mr. Winward.

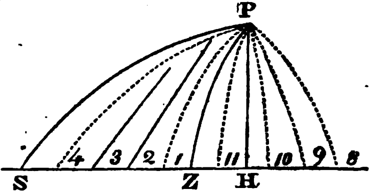
Put x^2 and $\frac{1}{16} - \frac{1}{2}x + x^2$ for the numbers required, which are obviously squares; then $\frac{1}{16} - \frac{1}{2}x + x^2 + x = x^2 + \frac{1}{2}x + \frac{1}{16} = (x + \frac{1}{4})^2$ also $x^2 + (\frac{1}{4} - x) = x^2 - x + \frac{1}{4} = (x - \frac{1}{2})^2$; it only remains then to make $\frac{1}{16} - \frac{1}{2}x + x^2 - x^2 = \frac{1}{16} - \frac{1}{2}x$, a square. Put $\frac{1}{4} - ax$ for its root, then $\frac{1}{16} - \frac{1}{2}x = (\frac{1}{4} - ax)^2 = \frac{1}{16} - \frac{1}{2}ax + a^2x^2$, and $x = \dfrac{a - 1}{2a^2}$; where a may be any whole number greater than 2. Take $a = 4$, then $x^2 = \frac{99}{1024}$ and $\frac{1}{16} - \frac{1}{2}x + x^2 = \frac{25}{1024}$, two numbers which answer the conditions of the question.

And according to one or the other of these methods it was answered by *Messrs. Anglicus, Baines, Brooke, Gawthrop, Hine, Maffett, Nesbit, Putsey,* and *Tomlinson.*

9. Qu. (39).

We have not received two solutions to this question in which the resulting numbers are exactly the same;—the difference arises from our correspondents not all making use of the same table of the sun's declination, and also from some of them allowing for *refraction*, &c. and others not.

Solution by Mr. A. Hirst, of Marsden.

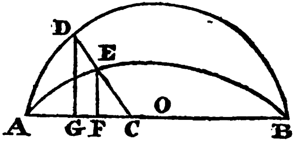


In the oblique angled spherical triangle P Z S we have P Z = 36° 45′ the co-lat. Z S = 65° 32′ the co-alt. (allowing 2′ for refraction) and PS = 83° 40′ the co-declination) to find the ∠ P = 56° 46′ 56″; hence the time of observation was 3h. 47m. 8s. P. M. Again, his azimuth or the ∠ P Z S = 114° 0′ 12″; therefore the declination of the wall is 24° 0′ 12″ easterly. Draw P H perp. to S Z produced; then in the right angled spherical trian. we have Z P, P Z H, and the right angle, to find H P, the height of the style = 33° 7′ 58″, and H Z the distance of the substyle from the meridian = 16° 53′ 49″, and the angle H P Z = the plane's difference of longitude = 29° 3′ 47″.

For the distance of the hour lines; rad. : sin. P H = 33° 7′ 58″ : : tang. H P 11 : tang. H 11 = 7° 47′ 47″ = the distance of the hour line eleven from the substyle. In the same manner all the rest may be found, and have been actually calculated by all who answered it; we, however, deem it unnecessary to insert them, as they would take up a great deal of room, and are on the whole useless.

Very nearly as above, the question was answered by *Mr. Baines, I. B. of Lincoln, Mr. Gawthrop, Mr. Hine, Mr. Maffett, Mr. Nesbit, Rylando, Mr. Tomlinson,* and *Mr. Winward.*

10. Qu. (40) *answered by Mr. Whitley, Rotheram.*



Let A D B be the given semi-circle, A the extremity of the arc from whence the motion commences, D and C any two contemporary positions of the bodies, D C the line connecting them, and E their common centre of gravity, which, since the bodies are equal, will be in the middle of D C, or D E = E C.

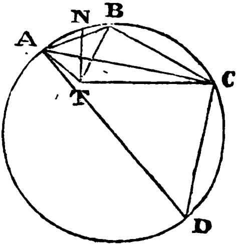
Draw D G, E F perp. to A B, and put the rad. A O =

r, arc $AD = z$, $AF = x$, and $GD = y$; then, by the question, the arc $ADB : AB ::$ arc $AD = z : AC :: 1.5708 : 1 :: 1 : 1 \div 1.5708 = m$ (suppose) then $AC = mz$, hence $FC = FG = mz - x$, and $AG = 2x - mz = AO - GO = r - \sqrt{(r^2 - y^2)}$; therefore $x = \frac{1}{2} mz + \frac{1}{2} r - \frac{1}{2} \sqrt{(r^2 - y^2)}$, and, taking the fluxions, we get $\dot{x} = \frac{1}{2} m\dot{z} + \frac{\frac{1}{2} y\dot{y}}{\sqrt{(r^2 - y^2)}}$; but from the nature of the circle, $\dot{z} = \frac{r\dot{y}}{\sqrt{(r^2 - y^2)}}$ which substituted above, we shall have $\dot{x} = \frac{\frac{1}{2}(mr\dot{y} + y\dot{y})}{\sqrt{(r^2 - y^2)}}$, and the fluxion of the area $AFE = \frac{1}{2} y\dot{x}$ (because $FE = \frac{1}{2}y$) $= \frac{1}{4} \times \left(\frac{rmy\dot{y} + y^2\dot{y}}{\sqrt{(r^2 - y^2)}}\right)$, the correct fluent of which is $\frac{rz}{8} + \frac{mr^2}{4} - \left(\frac{rm}{4} + \frac{y}{8}\right) \sqrt{(r^2 - y^2)}$ which when $y = r$ becomes $r^2 \times \left(\frac{1.5708}{8} + \frac{1}{4 \times 1.5708}\right) = r^2 \times .3555$, the double of which is $= r^2 \times .711 =$ in this case $1777\frac{1}{2}$ square yards $=$ the area of the space AEBA, which taken from 3927, the area of the semi-circle ADB, leaves $2149\frac{1}{2}$ yards for the area of AEBDA.

Note. The length of the curve is found in page 251, No. 13, Math. Companion: and scarcely different from the above were the solutions sent by Messrs. ***Hine***, ***Maffett***, ***Rylando***, ***Tomlinson***, and ***Winward***.

A very neat solution was also sent by ***Mr. Gawthrop***, which we are sorry we have not room for. Other answers were sent by Messrs. ***Anglicus***, ***Brooke***, and ***Nesbit***.

11. Qu. (41) *Answered by Mr. Nesbit, Farnley.*



In the annexed figure let T denote the tree, A, B, and C, the points in the circumference of the field defined by the extremities of the shadows, and let TN be the meridian line.

By well known rules in spherics we find the sun's azimuth from the north at the time of the first observation =

119° 52′ 15″, and his alt. then = 37° 58′ 51″. At the time of the second observation we find his azimuth from the north = 168° 20′ 54″, and alt. = 51° 20′ 52″. The azimuth from the north at the third observation = 73° 5′ 19″, and alt. = 6° 3′ 56″; from whence we find TA = 25.6165, TB = 15.9956, and TC = 188.2156 yards. Now in the triangle ATB, we have given AT, TB, and the ∠ ATB, = 71° 46′ 51″, to find the ∠ ABT = 71° 49′ 42″; again, in the triangle TBC we have TB, TC, and the ∠ BTC = 95° 15′ 35″, to find the ∠ TBC = 79° 56′ 24″; also the ∠ ABT + TBC = ∠ ABC = 151° 46′ 6″. Lastly, in the triangle ATC we have AT, TC and the ∠ ATC = ATB + BTC, to find AC = 213.2617. Draw the diameter AD, and join CD; then by simp. geom. 16. 3. the angle CAD = ∠ ABC — 90° = 61° 46′ 6″; hence the diameter AD is found = 451 yards nearly, and the content of the field = 33 acres.

Otherwise by Mr. J. Gawthrop, Leeds.

In this question we have given the time from noon, the latitude and the sun's declin. to find his alt. and azimuths at each of those times:

1. Hour ∠ 45° 0′, declin. 14° 50′ 45″, lat. 53° 5′, to find.......... } alt. 37° 58′ 51″ azim. 60° 7′ 45″.
2. Hour ∠ 7° 30′, declin. 14° 53′ 22″, lat. 53° 5′, to find.......... } alt. 51° 20′ 52″ azim. 11° 39′ 6″.
3. Hour ∠ 100° 0′, declin. 14° 58′ 00″, lat. 53° 5′, to find.......... } alt. 6° 3′ 56″ azim. 106° 54′ 41″.

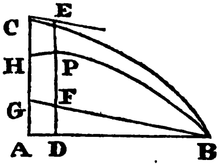
Now by adding the refraction and sun's semi-diameter = 15′ 55″, we have the apparent alt. of the sun's upper limb as follows:

1. 38° 15′ 54″ } then the height of the tree = 20 × tan. of co. alt. = { 25.3562 = length of the shadow at 9 A.M.
2. 51° 37′ 30″ } 15.8376 = ditto 12½h.
3. 6° 27′ 36″ } 176.6343 = ditto 6h. 40m.

Let T be the place of the tree; then in the triangle ATB we have AT = 25.3562, BT = 15.8376, and the ∠ T = 71° 46′ 51″ to find the ∠ TAB = 36° 24′ 2″; and in the triangle BTC we have BT = 15.8376, TC = 176.6343, and the ∠ T = 95° 15′ 35″ to find BC = 178.6179; also in the triangle ATC, we have AT =

25.3562, TC = 176.6343, and the ∠ T = 167° 2′ 26″, to find TAC = 11° 20′ 32″, then TAB — TAC = BAC = 25° 3′ 30″. Draw the diam. AD, and join DC; then, DCA is a right ∠, 31. Eu. 3, and the ∠ CDA = 25° 3′ 30″; also AC = 178.6179, whence AD = 421.726 yards, and the area is found = 28*a.* 3*r.* 17*p.* In this solution the variation of the sun's declination, also refraction, &c. is taken notice of, which makes the result different from the preceding one.

12. Qu. (42) *Answered by Mr. J. Whitley.*



The figure being described as per question, divide AC in G, so that AG may have to AB the given ratio of PE to DB. Then G will be a given point, and GB being drawn, meeting ED in F, will be given by position.

By sim. triangles, and the nature of the curve BPH, we have AG : AB :: DF : DB :: PE : DB; therefore PE = DF; consequently PD = FE; and the area BPHA generated by PD, will be equal to the area BGCB generated by FE = the quadrant ACB — △ AGB. Again, the ordinate PD will be a maximum when its equal FE is so; which is evidently the case when a tangent to the ellipse at the point E is parallel to GB; therefore, since GB is given in position, the point E may be found by Prob. 12. Book II. *Simson's Conics,* and from thence FE = PD, the greatest ordinate, will become known. *Ergo Solutum.*

The same by Rylando.

Put AB = t, AC = c, BD = x, DP = y, and DB : PE :: m : n. By the property of the ellipse, DE = $\frac{c}{t}\sqrt{(2tx - x^2)}$, and, by the question, $m : n :: x :$ PE $= \frac{nx}{m}$; therefore, DP $= y = \frac{c}{t}\sqrt{(2tx - x^2)} - \frac{nx}{m}$, which, when a maximum becomes $\frac{t\dot{x} - x\dot{x}}{\sqrt{(2tx - x^2)}} - \frac{tn\dot{x}}{cm} = o$ and by reduction $x = t \pm \frac{nt^2}{\sqrt{(2tx - x^2)}}$, the greatest ordinate.

From the equation of the curve we have $\dot{x}y = \frac{c\dot{x}}{t}\sqrt{(2tx - x^2)} - \frac{nx\dot{x}}{m}$ for the fluxion of the area, the fluent of which, or general expression for the area of the curve, is $\frac{c}{t} \times$ cir. seg. rad. t and versed sine $x - \frac{nx^2}{2m}$.

To find the area geometrically; since the ratio of DB : PE is given, the ratio of DB : DP is given also; therefore, take DB : DP :: AB : AF, and draw BFG, then the area of the curve will be equal to the triangle ABG.

Again, by Messrs. Hine, Maffett, and Winward.

Put AC $= a$, AB $= b$, $m : n$ the given ratio, DB $= x$, and DP $= y$; then $m : n :: x :$ EP $= \frac{nx}{m}$, and, by the ellipse, $a : b :: \sqrt{(2ax - x^2)} : \frac{b}{a}\sqrt{(2ax - x^2)}$ $=$ DE, hence $y = \frac{b}{a}\sqrt{(2ax - x^2)} - \frac{nx}{m}$; therefore the fluxion of the area, or $\dot{x}y = \frac{b\dot{x}}{a}\sqrt{(2ax - x^2)} - \frac{nx\dot{x}}{m}$, the correct fluent of which, when $x = b$, is $\frac{b}{a} \times$ A $- \frac{nb^2}{2m}$, where A is the quadrant of a circle whose rad. is a.

Also the fluxion of $\frac{b}{a}\sqrt{(2ax - x^2)} - \frac{nx}{m}$ being put $= o$, by reduction we determine the greatest ordinate as above.

Mr. Gawthrop's solution to this question is very neat, and purely geometrical.

Mr. Nesbit's name was omitted among the answers to the 11 Qu. No. IV. and *Mr. Putsey's* to Qu. 10.

We wish to observe to our correspondents in general, that as we have only a *few* days in which to collect and

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arrange all the materials for the Enquirer, it is next to impossible but that some trifling errors and omissions must occur; we are as careful, and take as much pains as we can to avoid both, but we are human, and it will be sufficient, we hope, to observe that the errors and omissions are few, and the latter were never intentionally made. From the 20th to the end of the month is all the time we are allowed.

Rylando is requested to send for any book he may think proper, the price of which does not exceed half a guinea.

NEW MATHEMATICAL QUESTIONS

TO BE ANSWERED IN NO. VII.

1. Qu. (56) *By Mr. Dunn, Broughton.*

Find three square numbers in arithmetical progression whose common difference is a cube number.

2. Qu. (57) *By Mr. J. Baines, Horbury Bridge.*

What number is that whose square root, cube root, and biquadrate root are in arithmetical progression?

3. Qu. (58) *By Mr. Putsey, Pickering Academy.*

The radius of a circle inscribed in a right angled plane triangle is 2 feet;--it is required to determine the sides of the triangle, such, that a heavy body may occupy one second of time in descending down the hypothenuse, when the plane of the triangle is perpendicular to the horizon?

4. Qu. (59) *By Mr. R. Maffett, Plymouth.*

Find two square numbers such that their sum, the root of the greater number added to the less, and the root of the less number added to the greater, may be all squares.

5 Qu. (60) *By the same.*

A person applied to a surveyor to measure him a field in the form of a right angled triangle; but the base and perpendicular being surrounded with water, he could only obtain the length of the hypothenuse = 100 chains, and that of a path-way bisecting the angle at the base, and terminating in the perpendicular = 80 chains: now *Mr. Cross-staff* contends that from these data the area cannot be had, and he has bet the gentleman the price of a new field-book, that none of the Theodolite gentry who write to the Enquirer, can from thence find the content. Pray, gentlemen, show him that, for once, he is wrong.

6. Qu. (61) *By Mr. J. Baines, Horbury Bridge.*

On what day of the year, in the lat. of 53° 45′ N. will the shadow of the point of a gnomon describe an hyperbola, whose transverse diam. is to the conjugate as 9 to 11?

7. Qu. (62) *By Rylando.*

To describe a parallelogram, which shall have its area and perimeter respectively equal to the area and perimeter of a given triangle.

8. Qu. (63) *By Mr. Putsey.*

At the moment a heavy body was let fall perpendicularly from the top of an inclined plane, another body was projected directly up it from the bottom, with a velocity equal to that which the same body would have acquired by descending freely down the length of the plane;—to determine their nearest approach; the length of the plane being 50, and its height 40 feet?

9. Qu. (64) *By Mr. Jesse Winward, 2nd R. L. Militia.*

What arc of a circle is that, the product of whose sine into its versed-sine is the greatest possible?

10. Qu. (65) *By Mr. Roger Vayheeg.*

Porism. Having a circle given in magnitude and position, another circle may be found, given also in magnitude and position, so that if through a given point P, any line be drawn cutting the circles in A, D, and B, the solid under A P, P D, P B, may be always of the same given magnitude.

11. Qu. (66) *By the same.*

Let tangents be drawn to two circles given in magnitude and position, what is the *locus* of their intersection when the sum of their squares is constant?

12. Qu. (67) *By Hurlothrumbo Minor, of the West.*

In the side A. B, of a given right-angled plane triangle B A C, (A the right ∠) there is a given point P; it is required to determine the point D geometrically, such, that D E being drawn perpendicular to P D, the triangle E D C may be the greatest possible.

Note. This question has been proposed before, but it was only answered algebraically.

13. Qu. (68) *By Mr. G. Harvey, jun. Plymouth.*

Two prismatic beams of equal length, whose sections are respectively a triangle and a trapezoid, the latter being cut from a triangular beam similar to the former, have their ends fixed in an upright wall, with their bases downwards; putting S, *s* for the strengths of the beams G, *g*, for the dist. of their centres of gravity from their bases, we shall have $S : s :: G : g$; required the investigation.

14. Qu. (69) *By the same.*

Given the difference of the segments of the base, the difference of the angles at the base, and the distance on the base between the perpendicular from the vert. angle, and point of contact of the inscribed circle: to construct the plane triangle geometrically.

15. Qu. (70) *By Mr. A. Nesbit, Teacher of Mathematics, Farnley.*

Admit that a person be fixed vertically over FARNLEY, in lat. 53°, 47′ N. at such a height as to be just able to see the sun's upper limb, at midnight on the 21st of June, should let fall a heavy body; it is required to ascertain with what velocity it would strike the earth, and also at what distance from Farnley; the force of gravity above the earth's surface, being inversely as the square of the distance from its centre, and the earth's radius 3985 miles.

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16. Qu. (71) *By Mr. Jesse Winward.*

Given the difference of the segments of the base, made by the perp. from the vert. angle, and the difference of the angles at the base, to construct the plane triangle when the rectangle under the perpendicular, and difference of the sides, is the greatest possible.

17. Qu. (71) *By Mr. A. Hirst, Marsden.*

There are two equal cones, the axes of each being 12 feet long, so posited that one of them standing on its base, on a horizontal plane, is just able to sustain the other, when the extremity of the base of the latter coincides with the vertex, and rests with its base on the slant side of the former; to determine the base of each cone, and also to determine, how much must be cut off from the vertex of the hanging cone, by a section perp. to its axis, so that a globe of the same matter, and whose diameter is the same as the diam. of the cone's base, may just keep the whole in equilibrio, when it is suspended at the bottom edge of the remaining frustum.

18. Qu. (72) *By Mr. Vayheeg.*

Let tangents be drawn to two given concentric circles, to determine the *locus* of their intersection, when the sum of their squares is constant.

19. Qu. (73) *By Mr. J. Tomlinson, Liverpool.*

In art. 787, Marrat's Mechanics, it is said that if the plane along which a heavy body is to be drawn be inclined to the horizon, the sine of the angle which the line of direction of the power makes with the plane, when it acts with the greatest advantage, will be $\frac{c}{\sqrt{(c^2+9)}}$; where c is the cosine of the angle of elevation to radius unity: required the investigation.

20. Qu. (74) *By Rylando.*

A circle and a straight line without it being given in position, it is required to determine the position of another straight line, such, that if from any point whatever in the line given by position, two tangents be drawn to the given circle, meeting the required line in two points, the segments of the tangents intercepted between this line and the points of contact may be always equal to each other.

Whoever sends the greatest number of true solutions to the preceding questions, in due time, will be entitled to a book value ten shillings and sixpence.

ON THE

PROPERTIES OF INFINITES AND NOTHING.

I SEND you the following paper, because it shows what strange things may be *demonstrated*, when we attempt to proceed beyond the bounds of finite quantity. Several of your mathematical readers are well aware, that it is customary with mathematical writers to denote certain quantities by symbols, and after having come to an equation, according to the nature of the enquiry, to suppose some one of these symbols to become equal to nothing, by which means other quantities, they say, become infinitely great. These are dangerous measures, and only serve to perplex the mind with inexplicable difficulties. All quantities or magnitudes must, ultimately, be referred to numbers; for instance, if we suppose $c \times t = r \times s$, if this equation means any thing, c, t, r, and s, must denote some numbers, let $c = 2$, $t = 6$, $r = 4$, and $s = 3$; then $2 \times 6 = 4 \times 3$, but if we make c or $2 =$ nothing, we destroy the equation, and rank nonsense is the result; for 6×0, can never be equal to 4×3.

Mr. Emerson, in his algebra, has a problem in which he proposes to explain the several properties of nothing (o) and infinity; he proceeds in the following manner. "It is plain that nothing added to, or subtracted from any quantity, makes it neither bigger nor less. Likewise, if any quantity is multiplied by o, that is, taken no times at all, the product will be nothing." This is very plan, for $o + a$ is $= a$ only, and $a \times o$ is certainly equal to nothing, whatever numeral value a may be expounded by; thus a hundred or a thousand times nothing is nothing.

"Let $\frac{b}{a} = q$, that is, let the quotient of b divided by a be $= q$; then if b remain the same, it is plain the less a is, the greater the quotient q will be. Let a be indefinitely small beyond all bounds, then q will be indefinitely great beyond all bounds; therefore, when a is nothing, the quotient q will be infinite. Whence also, since $\frac{b}{o} =$ infinity, therefore, $b =$ nothing × infinity." This is plain, the demonstration is exceedingly perspicuous, and the principles upon which it is founded are so obvious, that the conclusion must inevitably be true: what follows, it is presumed, must be equally so. Since $b = o \times$ infinity, and since b may also be any quantity, or number, at pleasure, let $b = 1$; then, $o \times$ infinity $= 1$; if $b = 2, 3, 4,$ &c. then $o \times$ infinity $= 2, 3, 4,$ &c. and so on for any number whatever. Therefore, it is exceedingly obvious, that $o \times$ infinity is $=$ to any number whatever, either in the present scale of numbers, or in any other that may hereafter be invented. But further, because $o \times$ infinity $= b$, and b may increase beyond all bounds, in the same manner as a was supposed to decrease beyond all bounds, therefore, b may become infinitely great, that is, b may be $=$ infinity, and then we shall have $o \times$ infinity $=$ infinity, which is a wonderful conclusion, and proves that an infinite number of nothings is equal to infinity.

Hence also, since $o \times$ infinity $=$ infinity, we have by division, $o = \frac{\text{infinity}}{\text{infinity}}$, or o is equal to infinity divided by infinity; also dividing both sides of the equation equally by o, we have $\frac{\text{infinity}}{o} =$ infinity. Several other corollaries might be deduced.

It has been proved above that $o \times$ infinity is $= 1$, or 2, or 3, &c. *ad infinitum*, we shall now *demonstrate* that o is, *itself*, $=$ to any number whatever, that is, that $o = 1$, $o = 2$, $o = 3$, &c.

Thus, the fraction $\frac{p - p^2}{1 - p}$, when $p = 1$, is evidently $= o$; but by actually dividing the numerator by the denominator, it is obvious that $\frac{p-p^2}{1-p}=p$, or when $p=1$, the fraction $\frac{p-p^2}{1-p}=1$, therefore, $1=o$, in the same manner $\frac{p-p^3}{1-p}$ is, when $p=1$ evidently equal o, but, by division $\frac{p-p^3}{1-p}=p+p^2=1+1=2$, when $p=1$; therefore, $o=2$. In a similar way we can prove that o is $=3, 4, 5, 6, 7, 8$, &c. The fractions given above, by which such wonders may be performed, are called *vanishing* fractions; they were first brought upon the tapis a long time ago, by some French mathematicians, and produced very violent disputes among the *literati* of that period. Some time since, they were again brought forward by two competitors for a professorship at Cambridge, *Powell* and *Waring:* the latter, in a work published on occasion of that competition, asserted, that the fraction $\frac{p-p^5}{1-p}$ is $=4$, when $p=1$. This Powell denied, because, says he, when $p=1$, then $\frac{p-p^5}{1-p}=\frac{1-1}{1-1}=o$, and here the matter rested; but Powell lost the professorship.

It was upon the basis of *vanishing* fractions that Mr. Landen founded his doctrine of the "Residual Analysis;" but as his doctrine had the misfortune to *vanish* before he died, it would not be right to conjure it again into existence.

The author of a pamphlet called the Analyst, endeavoured to explain the whole mystery of vanishing fractions; he demonstrated that *all* such fractions are equal to nothing. "Divide (says he) z^3-x^3 by $z-x$, and the quotient will be z^2+zx+x^2; and supposing that z and x are equal, this same quotient will become $3x^2$. But herein is a direct fallacy: for, in the first place, it is supposed that z and x are unequal, without which supposition, not one step could have been made, and in the second place they are supposed to be equal, which is manifest inconsistency." *Anal.* p. 186, *&c.*

Again, put $r =$ radius of a circle, s the sine of an arc of it, c the cosine, and t the tangent of that arc; then, by similar triangles, we have $c : s :: r : t$ (Vide the Elements of Plane Trigonometry) and $t = \frac{sr}{c}$; in this expression let c be diminished beyond all bounds, that is, let it become equal to nothing, for this will by no means destroy the equation, and we shall have $t = \frac{sr}{o}$; but, from the nature of the circle, when the cosine $= o$ the sine is $=$ radius; therefore, $t = \frac{rr}{o}$, or $t \times o = r^2$; whence it follows that one of these conclusions must take place when the cosine is $= o$; *viz.* either that the square of the radius of a circle is then $= o$, considering t as some finite quantity, or else that the square of the radius is $= o \times$ infinity, when t becomes infinite.

If the former take place, that is, if when t is any finite quantity, we may be allowed to say, which is evidently the case, that $t \times o = o$ (as demonstrated above) it is demonstrated beyond all contradiction that $r^2 = o$.

And since r may be of any assignable magnitude whatever, it follows that o is $=$ the square of any number whatever, or that *nothing* is $=$ to the area of any square, let the length of its side be whatever it may.

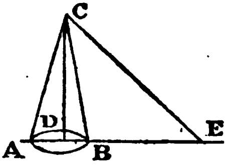
Dec. 28, 1811. *Analyst Minor.*

OBSERVATIONS ON A CURIOUS PROBLEM.

The following Problem was proposed in the Palladium for 1777, by Mr. Judson, of Beverly.

A CONE of marble 20 feet high, and diameter of its base 6 feet, is standing upright in a gentleman's garden, upon a horizontal plane: required the position of a rope, with one end fixed at the vertex of this marble cone, so that the least force or weight that can be applied to the other end of the rope shall be sufficient to overturn it.

In the Palladium for 1778, *the following Solution was given by Mr. Jos. James, of Stoke Bishop.*



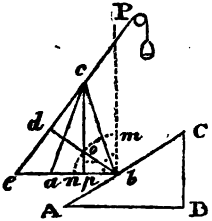
Let ABC represent the cone of marble. Put $a = CD = 20$ feet, and $x = DE$, then (47 eu. 1.) $\sqrt{(x^2 + a^2)} = CE$; and since, by mechanics, the application of a weight, or power applied to the rope, fixed at the vertex of the cone, is the angle which the line of direction of the power makes with the cone, we have by trig. $\sqrt{(x^2 + a^2)} = CE : 1 :: DE = x : \frac{x}{\sqrt{(x^2 + a^2)}} =$ the angle DCE, which by the question must be a maximum. In fluxions and reduced, $x =$ 13.2278 fere = length of the rope making an angle with the top of the cone = 33° 28′. This solution was confirmed by Mr. *George France* and Mr. *W. Veck*, of *Cosham*. In the corrections, in the Palladium for 1779, "*Newtoniensis* (probably *Heath)* observes, that the rope fixed to the top ought to be drawn parallel to the horizon, to pull the cone over with the least force."

" Mr. *Judson* also observes, that the solution by Mr. *James*, cannot be universally true. For, if the alt. of the cone had been 6, and the diam. of the base 20 feet, then the rope would have fallen within the cone's base, which is an impossibility. And as the slant height of the cone approaches nearer to a horizontal line, while the diam. of the base increases, the solution will still be impossible, &c. A similar question was lately published in the *Rockingham*, a *Hull* paper, and two solutions to it were inserted, notwithstanding which it was afterwards published again in No. 18, *Whiting's* Scientific Receptacle, under the following form,

By Mr. Thomas Wilson, of Hull.

A piece of marble. in the form of a right cone, the diameter of whose base is 6 feet, and altitude 20 feet, being placed, on its base, upon an inclined plane, it is proposed to raise the lowest part till the base be parallel to the horizontal, and to retain the cone in that position by a rope fixed to its vertex. Required the direction of the rope, that the weight, or power, necessary to hold it in that position, may be a minimum, and what that weight, or power, will be?

In the first solution, which appeared in No. 19 of Mr. *Whiting's* Receptacle, there is a trifling numerical error, which we shall correct, and which will render the solution complete; for, as it is drawn from first principles, and is besides as easy as the subject will admit, we shall insert it here, hoping that the matter may be set at rest, especially as our solution coincides with the very elegant one that follows it.



Let abc represent a section of the cone through its axis, o its centre of gravity, ABC the inclined plane, and let the other lines be drawn as in the figure. Then, since the cone is moveable about the point b, as a centre, the centre of gravity, o, will describe the circular arc nom as the cone revolves about b; therefore, by art. 156, Marrat's Mechanics, in every position of the cone, the direction of the power, when least, must be parallel to a tangent at o, or perp. to bo produced. Again, since o is the centre of gravity of the cone, it may be considered as the place of the weight, acting upon the lever bd, or on the bended lever cob; now the weight of the cone is 284 cwt. very nearly, which put $=$ W, and draw bP perpendicular to ab; let bP denote the weight of the cone, then by the resolution of forces, Pd will denote the force in the direction Pd; therefore Pb : Pd :: (by sim. trian.) $ob : pb$ :: W : $\frac{W \times pb}{ob} = \frac{284 \times 3}{5.83095} = 146.11684 =$ the relative weight at o, on the lever db; where dP is perpendicular to db. But, art. 135, *ut supra*, $db = 18.693348 : 146.11684 :: bo = 5.83095 : 45$ cwt. 2 qrs. 8.71136 lbs. $= w$, or the power which must be applied at c, in the direction dP, to keep the cone in the required position.

When the centre of gravity o coincides with the point m, the direction of the least power, to keep the cone in *that* position, is parallel to the horizon, and the power necessary to sustain the cone is indefinitely small, or nothing. When o coincides with n, the direction of the least power is perpendicular to the horizon.

Otherwise by Mr. J. Cottom, of Hull.

It appears to me, that the simplest method of solving the question is to continue cd and ba till they meet in c; then by the properties of the lever of the second kind, and oblique forces, we shall have $P \times eb \times$ nat. sin. $\angle c = pb \times W$, or $P \times 36\frac{1}{3} \times .514495 = 3 \times 284$, from whence $P = \dfrac{3 \times 284}{36\frac{1}{3} \times .514495} = 45.57778$ cwts. $=$ 45 cwts. 2 qrs. 8.71136 lbs.; and as the cone is to be held in the same position, it is immaterial at what part of the line ce the cord is supposed to be fastened.

What Mr. *Bronwin* has said, in No. 20, of the Scientific Receptacle, is quite unintelligible. For boe is a bended lever, the weight being at o, and it is equivalent to the straight lever bod, as is proved in art. 142, Marrat's Mechanics.

W. M.

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THE
ENQUIRER.

Juvenile Department.

COMMUNICATIONS

ON PRIZE SUBJECTS PROPOSED IN NO. V.

ARTICLES I. and II.

THE communications which have been received, on these two Articles, are not judged sufficiently correct for publication; at the same time, knowing that our juvenile friends are capable of better things, we beg to recommend to them the revision of their respective productions; and shall leave these articles open until the next number.

ARTICLE III.

TRANSLATED by Miss M. R. Hough, aged 14 years, Percy Street, Bedford Square, London, who is requested to accept the SILVER MEDAL.

CONSIDER this death as to the types which marked it; by the signs that portrayed it; by the ceremonies that represented it; by the prophecies that foretold it.

Consider this death by the lightning and thunderbolts which were hurled on the head of Jesus Christ. Behold his soul overwhelmed with sorrow; his blood shed on the ground; the cup of bitterness which your Saviour drank to the dregs: listen to the calumnies, the accusations, the unjust sentences; behold his hands and feet nailed to the tree, his body which is soon a universal wound, at the cross the exasperated and unruly populace augmenting the horror of his punishment; behold

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in heaven the Almighty Father expending the whole of his wrath on the head of his Son; behold hell in concert with heaven, and heaven with earth.

Consider this death by the terrible signs which accompanied it, by the earth which was shaken, by the sun which was darkened; by the rocks which were rent, by the graves which opened, and by the dead who returned to light.

Collect all these traits, and still say that the death of Christ is the whole of them. The death of Jesus Christ is the substance of figures, the original of types, the reality of metaphors, the fulfilment of prophecies. The death of Jesus Christ is the general receptacle of the anger of the Almighty, where all the arrows of his justice were darted, and all the phials of his wrath poured on one single head. The death of Jesus Christ was the great event that darkened the sun, opened the tombs, rent the rocks, caused the earth to quake, and that overturned nature and the elements. You regret the world; you who should go to heaven. And what is heaven? It is the price of this death. He who spared not his Son, but delivered him up to death for our sakes, will he not give us all things with him? If the means are so great, what must be the end? If the preparations are so rich, what will be the issue? If the combat is so violent, what will be the victory? If the price is so inestimable, what, what will be the riches acquired by this price?

What do you regret? Do you regret palaces, sceptres, and crowns? A crook which you carry, a hut which shelters you? Do you regret a society whose failings and perfections are often an equal source of misery to you? Ah! phantom of our desires, dost thou still appear before our eyes, and dost thou still hold out against the real blessings that the death of Jesus Christ has obtained for us?

Death is then not terrible to the christian. In the sepulchre of Jesus Christ are dissipated all the terrors which were found in the tomb of nature. In the tomb of nature I see an impenetrable darkness, in the sepulchre of Jesus Christ I behold light and life. In the tomb of nature I see the punishment of my sins; in the sepulchre of Jesus Christ I behold their atonement; I see in the tomb of nature the sorrowful destination of Adam, and his unhappy posterity—"dust thou art, and to dust thou shalt return," in the tomb of Christ I break forth in thanksgiving. Oh death, where is thy sting? Oh grave, where is thy victory? Thanks be to God who has given us the victory, through Jesus Christ our Lord.

Attested by her Father, Mr. T. Hough.

ARTICLE III.

TRANSLATED by Master F. C. Spencer, aged 14¼, Blackwall School, near Halifax.

CONTEMPLATE this death through the medium of the types which have prefigured it; in the shades which have delineated it; in the ceremonies which have represented it; and in the prophecies which have foretold it.

Contemplate this death, in the indignation and wrath which have been heaped upon the person of Jesus Christ. See his soul weighed down with sadness; his blood pouring upon the ground; the cup of bitterness of which your Saviour drank so deeply: hearken to the insults, the calumnies, the accusations, the unjust decrees; behold his feet and hands pierced with nails; his body almost covered with wounds; an infatuated mob burning with rage at his cross, and increasing the horror of his punishment: ascend even into heaven itself; behold the Almighty pouring upon the head of his Son all the phials of his anger; see hell in concert with heaven, and heaven with earth.

Contemplate this death in the dreadful signs that accompanied it; in the earth that trembled, in the sun that was darkened, in the stones that were rent asunder, in the graves that were opened, and in the dead that returned to light.

Collect all these traits, and you must still say that the death of Jesus Christ is seen in them. The death of Jesus Christ is the substance of the figures; the original typified; the reality of the shadows; the fulfilment of the prophecies. The death of Jesus Christ is the universal assemblage of the furies of the Almighty, where all the arrows of his justice have been darted against one single person, and all the phials of his wrath poured upon a single head. The death of Jesus Christ is the grand event which darkened the sun, opened the tombs, rent the stones asunder, made the earth to tremble, overthrew nature and the elements. You repine at the world. You who may go to heaven. And what is this heaven? It is the price of his death. He that spared not his own Son, but who delivered him for us to death, will he not with him give us all things? If the means are so great, what must be the end? If the preparations are so splendid, what will be the consummation? If the fight be so severe, what will be the victory? If the price is so inestimable, what, what will be the advantages acquired by that price?

For what do you repine? Will you repine for palaces, sceptres, and crowns? Will you regret the staff which supports you, or the hut in which you live? Will you regret society, a society of which the defects or the perfections are often to you an equal source of misery? Ah! phantoms of our lust, will you appear still to our eyes, and withhold us yet longer from the real advantages which by the death of Jesus Christ we may acquire?

Death has nothing dreadful to a christian. In the tomb of Jesus Christ are dispersed all the fears that are found in the tomb of nature. In the tomb of nature I see a dark night through which I cannot penetrate; in the tomb of Jesus Christ I see light and life. In the tomb of nature I see the punishment of my offences; in the tomb of Jesus Christ I see my crimes expiated. In the tomb of nature I see the sad destination of Adam and his unfortunate descendants—"dust thou art, and to dust thou shalt return." In the tomb of Jesus Christ I break out in thanksgivings. O grave, where is thy victory? O death, where is thy sting? Thanks be to God who has given us the victory, through Jesus Christ our Lord.

Attested by Mr. T. S. Swale, Master.

Other very good TRANSLATIONS were sent by

Miss M. Hall, aged 14½, Mare Street, Hackney.
Attested by Mrs. S. Bowring, Grove House, Hackney.

Master W. Freme, aged 15, Townhead Academy, Rochdale.
Attested by Mr. H. Hermitage.

Master C. Metcalf, aged 15¼, Wisbeach.
Attested by Mr. Suchard, and his Father.

Master H. Atkin, aged 14, Sheffield Academy,
Attested by Mr. Abraham.

Miss M. Groves, aged 15, Spalding Seminary,
Attested by her Governesses, Miss S. and I. Hebard.

Miss A. H. Holdsworth, aged 14½, Well Street, Hackney,
Attested by Mrs. Holdsworth.

Master T. F. Marillier, aged 13½, Homerton,
Attested by Mr. F. Marillier, French Master.

Master R. Daking, aged 13¼,
Attested by Mr. A. Danet.

Miss M. Graves, aged 14¼, Hackney.
Attested by Mrs. Batt, Governess.

Master P. S. Templeton, aged 13, Shenfield Academy, near Brentwood, Essex,
Attested by Mr. S. Perry, Master, and Mr. B. Brown, Assistant.

Miss A. Kemp, aged 14¼, Homerton,
Attested by Mrs. Batt, Governess, Wirtemberg House.

ARTICLE IV.

THEME I. "On SUPERSTITION," by Miss Abigail Kemp, aged 14¼, Homerton.

"WHEN religion is considered in any point of view, it appears as an object worthy of our highest reverence and love, being inspired by the sentiments of gratitude to the Being to whom we owe every blessing, and on whom all our dependence is placed; but too often we find it disgraced by Superstition, which produces the greatest evils in abusing the greatest good.' To the truly religious, it would seem sufficient to contemplate the lowest works of the creation, in order to adore the Divine Architect who built the whole; but man, when guided only by the light he obtains from reason and nature, being unable to comprehend his perfections, blindly substitutes the phantoms of his imagination in the place of his Maker, and bestows the worship due to the true God on the idols which himself has framed. So little is he capable of entertaining any just ideas of the nature of the Deity without a revelation from him, that we find all those nations that are not thus favoured, sink in the grossest superstitions. Mere unassisted reason cannot pierce the obscurity with which Jehovah is shrouded, but loses itself amid the mazes of ignorance and error. Nature assures us of the existence of a superintending Providence, who has created all things, but she can go no further; his perfections surpass her understanding; she is dazzled by the effulgence of his power and glory, and lost in the contemplation of his goodness. The Creator, being thus superior to the utmost stretch of man's understanding, he invented divinities more suited to the narrow limits of his capacity. The worship of the sun and the moon seems to be a natural beginning of idolatry, for when the almighty Maker is once lost sight of, they may easily be mistaken for the rulers of the world they animate and enlighten; mortals and animals have been adored, and we read that even plants were deified by the Egyptians. Thus, while men superstitiously venerated his works, they forgot the omnipotent Being who produced them, and 'worshipped and served the creature more than the Creator who is blessed for ever.' The sacrifices that are sometimes offered to these imaginary deities, make us shudder even at the thoughts of them. The hideous sight of parents devoting their children, and even themselves, to destruction, to propitiate an idol, inspires us with detestation for a religion, the rites of which are so horrible. History records but too many instances of the melancholy effects of Superstition; but, perhaps, there are none more shocking than that related of the Carthaginians, who being once alarmed at the successes of the Romans, sacrificed two hundred children of the best families in Carthage, to appease the anger of Saturn, to which they attributed their misfortunes! How different to these cruelties is the benevolent spirit inculcated by the precepts of the Gospel! How opposite to the ceremonies of Superstition is the worship required by the true God!

"It is certain, however, that Superstition does not always appear arrayed in so terrible a garb; but in some other she is too frequently found, even among Christians: a foolish bigotry for particular tenets, and ridiculous apprehensions and scruples in religion, often plainly indicate her presence; but, 'though diversified in a thousand shapes, she is still the scourge and shame of mankind'."

Attested by Mrs. Batt, Governess.

THEME II. "ON SUPERSTITION," by Miss Mary Russel, Hough.

"OF all the follies to which the human mind is subject, scarcely any are more detrimental to its happiness than Superstition. A superstitious person is not only fearful and over scrupulous concerning religion, but gives way to all kinds of imaginary evils.

"Many, who in other respects possess sound judgment and brilliant talents, become victims to this folly; and in addition to the common and unavoidable calamities of this life, are perpetually forming to themselves new ones, by the anticipation of future events. If a raven croaks, or an owl shrieks, they are terrified; when, perhaps, if any real misfortune happened, they would bear it with fortitude. An absurd belief in the agency of supernatural beings, inclines them to imagine that divination and witchcraft have a real influence on human events, therefore they brand every poor solitary old woman with the name of a witch, who is constantly shunned as the cause of ill luck to mortals, and they consequently practise a thousand fooleries to counteract her supposed spells. If they would reflect that no event happens but by the special decree of Providence, they would not suffer their minds to be biassed by every trifling occurrence which they consider ominous. But since Superstition is generally the effect of ignorance, it will gradually cease as knowledge still more enlightens the globe. One who has a firm reliance on the goodness and protection of God, will always consider every event as a merciful dispensation; and, content in whatever state of life he is placed, will not endeavour to anticipate evils which cannot be avoided."

Attested by her Father.

Other Themes, worthy of much commendation, were sent by

Miss E. Willerton, aged 13¼, Spalding Seminary,
Attested by Miss S. and I. Hebard.

Miss M. Groves, aged 15, Spalding Seminary,
Attested as above.

Miss F. Ayre, aged 12 years, Spalding Seminary,
Attested as above.

Miss C. Holland, Spalding Seminary,
Attested as above.

ARTICLE V.

We have received two communications in this department. One, "Verses on Christmas Day;" another, "Lines on the King's Illness." We are sorry to observe that both these productions are much below the standard which our juvenile poetry has hitherto reached, and also very inferior to some former poems which we have received from the same young gentlemen. We shall not award any prize in the Poetical Department this number, and recommend our young friends to revise their respective productions, which we shall be very happy to receive in time for Number VII.

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ARTICLE VI.

QUESTION I.

Answered by Master S. *Aydon*, Wakefield.

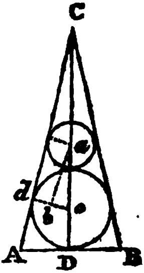
Put the transverse diameter$=t$, the conjugate$=c$, and $,7854=n$; then by the question $(t+2)\times cn=40+ctn$, and $(c+2)\times tn=50+ctn$; or $2cn=40$, and $2tn=50$; whence $c=\frac{40}{2n}=25,46473$, and $t=\frac{50}{2t}=31.83091$.

Exactly as above were the answers sent by Masters *H. Atkin*, Academy, Sheffield; *J. Bramall*, Lingardswood; *R. Chambers*, Broughton; *W. Harrison*, Burton Pidsea; *J. Macann*, Long Sutton; *R. Sharp* and *J. Wadsley*, Surfleet; and *S. Stead*, Farnley.

QUESTION 2.

Answered by Master S. *Stead* and *R. Chambers*.

By similar triangles $ob=2 : oa=10 :: od=6 : oC=30$, and $Cd=\sqrt{(30^2-6^2)}=29.3938769$; again, $bd : ob :: CD : CA=36.74235=$ each side, also $Cd : od :: CD : AD=7.34847$, whence the base $AB=14.69694$.



Again by Masters *Aydon* and *Harrison*.

By sim. triangles $ob : od :: oa : oC=30$, and $CD=Co+oD=36$; then, $ab=\sqrt{(ao^2-ob^2)}=4\sqrt{6}$, Then, $ab : DC :: ob : AD=3\sqrt{6}$, hence $AB=6\sqrt{6}$, and AC or $BC=15\sqrt{6}$.

True answers were also sent by Masters *Atkin*, *Bramall*, *J. Macann*, *Sharp*, *Stead*, and *Wadsley*.

QUESTION 3.

Answered by Masters *R. Chambers* and *J. Wadsley*.

The solidity of the segment whose base diameter is 3 and alt. 1 is 4.0579, and the diam. of the sphere of which the alt. of the segment cut off is 1, is $=\frac{1.5^2+1^2}{1}$

$=3.25$; now by sim. solids $4.0579 : 3.25^3 :: 3948 : 33398.417285$; whose cube root is 32.204 inches nearly, the diameter sought.

The same by Master *Bramall.*

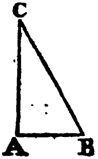
Let $4x$ and $12x$ denote the diam. and alt. of the segment, and put 14 gal.$=3948$ in.$=a$, and $5236=n$; then $(4x)^2+(6x)^2\div 4x=$the diameter of, the sphere in terms of x. But by rule 2, page 153, Hutton's Mensuration, the solidity will be $496nx^3=a$, that is $x=\sqrt[3]{\frac{a}{496n}}=2.477226$, hence the diameter$=32.2039$ in. as required.

Answers were also sent by Masters *Atkin, Aydon, Harrison, Macann,* and *Stead.*

QUESTION 4.

Answered by Masters *Atkin, Aydon, Bramall, Harrison, Stead,* and *Wadsley.*

Let ABC be half the triangle, and we have $AB+BC=14=a$, and $AC\times AB=37.14655=b$, by the question. Now $AC=\sqrt{(a^2-2ax)}$ by Euc. 47.1. and $x\sqrt{(a^2-2ax)}=b$, or by reduction, and restoring the values of a and b, $x^3-7x^2=49.28096$, from whence $x=4.18145$ or 5.1203; hence the base is 10.2406, or 8.3629, and the equal sides 8.8797 or 9.81855.



Answers were transmitted by Masters *Chambers* and *Macann.* Master *S. Stead,* of Farnley, is requested to send for the SILVER MEDAL.

PRIZE SUBJECTS

TO BE ANSWERED IN NO. VII.

ARTICLE VII.

The best translation of Horace's Ode "Ad Grosphum," as inserted in No. V. by gentlemen not 17 years old, will be entitled to a PRIZE.

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ARTICLE VIII.

As we have not awarded a Prize for the translation of the extract from "Cicero de Senectute," proposed in No. V. we again propose it, and the best translation by any young lady or gentleman not 16 years old, will be entitled to a PRIZE MEDAL.

ARTICLE IX.

The best poetical translation of the following verses, by young ladies or gentlemen not 16 years old, will be entitled to a SILVER MEDAL.

LA BONNE MERE.

Vois la tendre mère entourée
Des enfans qu'elle a mis au jour!
Auprès d'eux son ame enivrée
Tressaille et de joie et d'amour.
Avec douceur sa main légère
En flattant l'une donne à son frère
Une étreinte contre son cœur;
L'autre sur les genoux s'élance;
Son bras l' aide; un pied qu'elle avance
Sert encore de siége à sa sœur.

Dans un regard, une caresse,
Dans leurs baisers, dans leurs soupirs,
Son cœur fait lire avec addresse
Tous leurs mille petits desirs.
Ils parlent tous; et sans rien dire,
Elle répond par un sourire
A leurs mots demi-prononcés.
Elle veut prendre un air sévère,
Et l'on voit combien elle est mere
Dans ses yeux même courroucés.

C'est ainsi que la Providence
Veille sur le sort des humains,
Et que son amour leur dispense
Les trésors ouverts dans ses moins:
Les grands, les maitres de la terre,
Le pauvre en son humble chaumière

Elle écoute tous les mortels
Et sa bonté constante et sûre
Partage à toute la Nature
Ses dons et ses soins paternels.

Que jamais l'homme ne l'accuse
D'indifférence ou de rigueur,
Si quelquefois elle refuse
Une grâce chère à son cœur!
Ce n'est que pour nourrir ton zèle
Et pour te rendre plus fidelle,
Qu'elle diffère à t'exaucer;
Ou plutôt sa bonté suprême
Te fait une grâce, alors même
Qu'elle semble te refuser.

ARTICLE X.

THE best theme, or essay, *on any subject,* that any young lady or gentleman, under 16 years old, may think proper to write upon, will be entitled to a SILVER MEDAL.

ARTICLE XI.

THE best copy of verses, in English, *on any subject,* by young ladies or gentlemen, not 16 years old, will be entitled to a SILVER MEDAL.

The Editors of the Enquirer wish particularly to call the attention of their young friends to ENGLISH PROSE COMPOSITION, being well aware that no part of education is of more importance than the formation of a clear and perspicuous style of writing. In whatever situation of life it may be the future fortune of the juvenile Correspondents of the Enquirer to be placed, they will find that this acquisition is of the utmost consequence, and equally serviceable and necessary to the Tradesman, the Merchant, and the Country Gentleman.

ARTICLE XII.

The best solutions of the following questions, by any young lady or gentleman not 16 years old, will be entitled to a SILVER MEDAL.

Question 1. By Master S. Stead, Farnley Academy.

Find the area of a triangle whose base is 40, one side 30, and the line drawn from the vertex to bisect the base, 25 chains.

Question 2. By Miss E. Holland, Spalding Seminary.

What proportion does a square incribed within any circle, bear to one circumscribed about the same circle?

Question 3. By Master W. Harrison, Burton Pidsea.

Required the least whole number, which, being divided by 2, 3 and 4 respectively, will leave 1, 2 and 3 for remainders.

Question 4. By the same.

Find x, when $x^6—6x^4—24x^2—27=0$.

Miscellaneous Correspondence, &c.

A SURVEY OF ROMAN ANTIQUITIES

IN THE

COUNTY OF LINCOLN.

(*Continued from vol.* ii. *p.* 28.)

It was my intention in the present communication to have attempted to fix the scites of Roman station north of the Witham; but in consequence of being disappointed in not receiving a promised communication of interesting matter from a correspondent, I have been induced to alter my plan, and to proceed with the account of antiquities discovered in and near LINDUM-COLONIA.

The Roman remains which have at various periods been discovered in Lindum may be classed under the following heads, *viz.* sudatories, hypocausts, sepulchres, coins, pavements, and aqueducts.

Sudatories and hypocausts.—"In 1793, some labourers digging a cellar belonging to the chanter's house, at the south-west corner of the close, adjoining to the Chequer-gate, found two or three stone coffins, which probably had lain there ever since the demolition of the ancient parish church of St. Mary Magdalen, which had been erected near the spot since the Roman times, but was probably taken down to make way for the cathedral and its appendages. On going to the depth of about thirteen feet, they broke through a tesselated floor into a vault, which afterwards proved a Roman hypocaust. The præfurnium, covered with a large flat stone at the entrance, was three feet six inches square; height uncertain from rubbish. The formax a brick vault three feet six inches long; from three to four feet high; and from two feet to nineteen inches wide. This had been much impaired by the violence of the fire, but might be taken down and rebuilt as often as necessary, being only built against the mouth of the alveus, and not united with it in building; bits of burnt wood were thrown out of it. The alveus, or body of the flue, was twenty-one feet four inches long; eight feet four inches broad; and two feet six inches high; its top turned with a semicircular brick arch. On the floor, of strong cement, composed of lime, ashes, and brickdust, commonly called terrace-mortar, stood two rows of pillars, two feet high, made of brick, eleven in a row, in all forty-four, besides two half pillars; the two outer rows eleven inches diameter, joined with mortar; the two inner rows eight inches square, each standing on a brick eleven inches square, and two thick, and covered with another of the same thickness, but from seventeen to nineteen inches square. The round composed of ten courses of semi-circular bricks laid by pairs, the joint of every course crossing that of the former at right angles, with so much mortar between, that the two semi-circles rather form an oval, making the pillars look, at first sight, as if they were wreathed; the square pillars, composed of thirteen courses of bricks, eight inches square, thinner than those of the round ones."

"The floor of the sudatory, resting on these pillars, is composed of large bricks, twenty-three by twenty-one inches, which lie over the square bricks on the pillars, the four corners of each reaching the centres of the four adjoining pillars. On this course of bricks is a covering of cement six inches thick, inlaid with a pavement, composed of white tesselæ; at the side were two *tubuli* or flues, twelve inches wide, and fourteen inches deep, for carrying off the smoke; their bottoms even with that of the alveus, and they are carried upon the level about fifteen feet under the room, by the side of the hypocaust, and then it is presumed they turn upwards. The walls of this room were plastered, and the plaster painted red, blue, and other colours, and its floor set with white tesselæ, but no figure discernible in either pointing or pavement. This pavement, which is on a level with the testudo of the hypocaust, is about thirteen feet below the present surface of the ground; so deep is old Lindum buried in its ruins. In digging up the pavement, the workmen struck into another flue, three feet from the north-east corner of the hypocaust, and before they reached the pavement they dug up the wall by pieces, to the depth of five or six feet, with the rubbish of a room, under which the *tubuli* ran on the east side of the alveus. It was found before Feb. 16, and closed before April 7, 1740." M.

(To be continued.)

TO THE EDITORS OF THE ENQUIRER.

Perhaps some of the antiquarian readers of the Enquirer, will favour the public by giving a modern dress to the following Charter, granted by king Athelstan nearly 900 years ago. Should any young friend attempt this, the notes at the foot may be of service.

SPALDINENSIS.

CHARTA ADELSTANI REGIS, SANCTO WILFRIDO DE RIPPON CONCESSA.

WYT all that es and es gan,
Yat ik king Adelstan
As given als frelith as I may,
And to ye Capitel of Seint Wilfrai,
Of my free devotion
Yair pees at Rippon;
On ilke side the kyrke a mile,
For all ilk deeds and ylke agyle;
And within yair kyrke yate
At ye stan yat Grithstole * hate.
Within ye kyrke dore and ya quare,
Yair have pees for les and mare.
Ilkan of yis stedes sal have pees
Of Frodmortel † and ils deeds
Yat yair don is, Tol, Tem,
With iron ‡ and with water deme,
And yat ye Land of Seint Wilfrai
Of alkyn geld § free sal ay.
At nai nan at langes me to
In yair Herpsac ‖ sal have at do;
And for ik will at yai be save
I will at yai alkyn freedome have:
And in all thinges be als free
As hert may thinke, or eygh may see:
At te power of a kinge
Masts make free any thynge.
And my seale have I sat yerto
For I will at no man it undo.

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* Grithstole (Sax.) *sedes pacis*. A sanctuary.

† Frodmortel or freodmartel, freedom or immunity granted for committing manslaughter.

‡ Fire and water ordeal.

§ Geld or gild, according to Camden, signifies a tribute or tax; it also means a mulct for a fault, hence *weregeld* is the price of a man, and *orfgeld* of a beast.

‖ Herpsac I believe is of nearly the same import as *Frithsocne* or Frithsoke *i. e.* a place of immunity.

BIBLIOGRAPHICAL ANECDOTES.

(Continued from p. 36.)

Il Decamerone di M. Giovanni Boccaccio, nuovamente coretto et con diligentia stampato. In Firenze, Giunti 1527, *octavo.*

This edition of Boccaccio's Decameron is much esteemed for its superiority, in point of correctness, over every previous edition, they having been printed from manuscripts disfigured by the ignorance of the transcribers, and every edition, till this made its appearance, contained a repetition of errors. The only complete copy of the author's original work had been made by François D'Amaretto Maneli, a Florentine gentleman, in 1384, nine years after the author's death; and it was reserved for three young and learned Florentines to superintend this editition, published by the Giuntis; and they, very judiciously, made use of texts much more correct than any that had been previously consulted, and took advantage of the defects observable in others, to render their own edition more correct. It was afterwards counterfeited at Venice, under the same form and date, and those not in the secret have sometimes bought the counterfeit for the original. *De Bure,* in his "*Bibliographie Instructive,*" *vol.* iv. *p.* 60, has made several remarks by which to distinguish the editions from each other; the most palpable difference to common observers may be seen in the title-page, whereon is a flowret, representing the fleur de lys of the Giuntis, engraved on wood, and surrounded or enclosed by a square or border, which border, in the original, appears separated in many parts, as if composed with so many pieces; whereas, in the false edition, this square appears entire, without the least separation or division whatever; beneath this fleur de lys appears the date M-D-XXVII- which in the original has the separation points square, but in the counterfeit they are triangular, thus M▲D▲XXVII▲ *Osmont,* "*Dictionnaire des Livres rares,*" *tom.* i. *p.* 109, repeats what De Bure has said, and adds, that at line 14 of the 1st page of the original are the two words "*rifrigerio già,*" which are printed as one word in the copy, by being joined, and making "*rifrigeriogià*"; as also that in the original, folio 33, verso, the word *Giorntaa* is printed at the head of the page, which, in the counterfeit, is altered to *Giornata.* In the original, page 24 is marked 42, and page 108 is numbered 168, which faults are corrected in the counterfeit. "Son prix," says Osmont, "est arbitraire, elle se vend jusqu'à 6 à 700 livres." At M. Paris' sale at Edwards' in Pall-Mall, in 1791, a fair copy in red morocco was bought by Mr. Woodhull for £15. The rarest edition of Boccaccio's Decameron is the first, printed in 1470 or 1471, and of which, I have been told, a copy has been sold for 100 guineas; however this may be, at Paris' sale Molini bought a copy (having the last leaf rather imperfect) for £16.

List of some of the principal Editions of Shakspeare's Works, as also the Prices paid by the Booksellers of London to the Editors of several of them.

The first folio edition of the Works of Shakspeare, in a collected form, was published in 1623, by Jaggard and Blount; reprinted 1632, 1664, and 1685; an edition verbatim from the one of 1623, but very inaccurately printed, was published, in 1808, by Longman and Co.

Shakspeare's Works, by Rowe, 7 vols. 8vo. London, 1709.
———————— Do. 9 vols. 12mo. 1741.
———————— Pope, 6 vols. 4to. 1725.
———————— Do. 10 vols. 12mo. 1728.
———————— Theobald, 7 vols. 8vo. 1733.
———————— Do. 8 vols. 12mo. 1740.
———————— Hanmer, 6 vols. 4to. 1744.
Do. 1771.
———————— Warburton, 8 vols. 8vo. 1747.
———————— Johnson, 8 vols. 8vo. 1765.
———————— Stevens, 4 vols. 8vo. 1766.

Shakspeare's Works, by Capell, 10 vol. crown 8vo. 1768.

———————— Johnson and Stevens, 10 vols. 8vo. 1773—2nd edit. 10 vols. 8vo. 1778 —3d edit. 10 vols. 8vo. 1785—4th edit. 15 vols. 8vo. 1793. Of the latter edit. 25 copies were printed on large paper, one of which was sold at Isaac Reed's sale in 1807, for £29.

———————— Johnson, Stevens, and Reed, 21 vols. 8vo.

———————— Malone, 10 vols. cr. 8vo.

To these may be added, Boydell's in 9 vols. folio.—Chalmers's, 9 vols. 8vo.—Wood's, 14 vols. 12mo.—Rann's, 6 vols. 12mo.—Ayscough's, 2 vols. 8vo. and perhaps twenty other editions,

	£	s.	d.
Mr. Rowe was paid for editing Shakspeare,	36	10	0
Mr. Hughes for do.	28	7	0
—— Pope, do.	217	12	0
—— Fenton, do.	30	14	0
—— Gay, do.	35	17	6
—— Whalley, do.	12	0	0
—— Theobald, do.	652	10	0
Dr. Warburton, do.	500	0	0
Mr. Capel, do.	300	0	0
Dr. Johnson, for the first edition,	375	0	0
———— for the second do.	100	0	0

The following anecdote related in 'Dibdin's Bibliomania, or Book Madness,' will not be misplaced here.

A singular story is extant about the purchase of the late Duke of Roxburgh's fine copy of the first edition of Shakspeare. A friend was bidding for him in the sale room; his Grace had retired to a distance to view the issue of the contest. Twenty guineas and more were offered from various quarters for the book: a slip of paper was handed to the Duke, in which he was requested to inform his friend whether he was to "continue bidding,"—his Grace took his pencil, and wrote underneath, by way of reply,—

———————— Lay on Macduff!
And d—d be he who first cries "Hold, enough!"

Such a spirit was irresistible, and bore down all opposition: his Grace retired triumphant with the book under his arm.

Mr. Reed, editor of the much-esteemed edition of our bard's works, possessed a copy of the first edition, divided into 3 volumes, and illustrated with additional portraits, and which, at his death, was sold for £38.

Athenian Letters, or the Epistolary Correspondence of an Agent of the King of Persia residing at Athens.

This work consists of the imaginary correspondence of a company of Greeks, the contemporaries of Socrates, Pericles, and Plato; but, in reality, the actual correspondence of a society of learned men at the University of Cambridge, who, under fictitious characters, communicated to each other the results of their researches into ancient history, and through this medium laid before the public an entertaining and instructive work. When this correspondence had continued for a considerable time, and the number of letters had become so large as to render the transcribing of them for the use of the association too troublesome, it was agreed that *twelve* copies should be printed, which was accordingly done in 1740. A copy of this edition, it is evident, from the smallness of the number printed, exclusive of any other consideration, must be a great rarity, and whenever met with, either in a book auction or a bookseller's shop, must sell for a pretty high sum. In 1781 another small edition of 100 copies was printed in 4to. and in 1798 a more extended edition in 2 vol. 4to. with portraits, &c. and which was, I believe, reprinted last year for Messrs. Cadell and Davies. "This book is said to be the best commentary on Thucydides ever written."

Miller's Retrospect of the Eighteenth Century.

Destruction of Libraries in the Time of Henry the Eighth, at the Dissolution of Monasteries.

It is a circumstance well known to every one at all conversant in English history, that the suppression of the lesser monasteries by that rapacious monarch Harry the Eighth, took place in 1536. Bishop Fisher, when the abolition was first proposed in the convocation, strenuously opposed it, and told his brethren that this was fairly showing the king how he might come at the great monasteries. "And so, my lords," concluded he, "if you grant the king these smaller monasteries, you do but make him a handle, whereby, at his own pleasure, he may cut down all the cedars within your lebanons." Fisher's opinion was borne out by the subsequent acts of Henry, who, after quelling a civil commotion occasioned by the suppression of the lesser monasteries, immediately abolished the remainder; and on the whole, suppressed 645 monasteries: of which twenty-eight had Abbots that enjoyed seats in Parliament. Ninety colleges were demolished, 2374 chantries and free chapels, and 110 hospitals. Bayle, in his Epistle upon Lelande's Journal, much laments the destruction that took place in the religious houses at this period; those who purchased them took the libraries as part of the booty. Some they sold to the grocers, and others they sent over sea in ship loads. "I know a merchant," says he, "who bought two noble libraries for forty shillings each."

Letters from a Gentleman in the North of Scotland, to his Friend in London. 2 vols. 8vo. London, 1754.

The author of these Letters was one *Birt*, an understrapper commissary, who, as is natural to such people, was, in his own opinion, a man of great consequence. Major Hepburn of Aldercron's Regiment, mentioned at Madras an anecdote of *Birt*, which, I think, happened at Inverness. *Birt* giving himself some consequential airs, said, "*he* represented his *Majesty*." Upon which a dry Scot replied, "Hoot mon!—*You represent his Majesty! He,* God bless him! is muckle better represented on a bawbee."

This anecdote I found in a copy of the 'Letters,' purchased at Dalrymple's sale, 1809.

"*The newe Attractiue, containing a short Discourse of the Magnes or Lodestone, and amongst other his vertues, of a newe discouered secret and subtile propertie, concerning the declinyng of the Needle, touched therewith, under the plaine of the Horizon. Now first found out by* ROBERT NORMAN, *Hydrographer. Small* 4°. *Imprinted at London, by John Kyngston, for Richaad Ballard,* 1581."

This rare tract is the production of Robert Norman, who first discovered what is called the dipping of the needle, and which discovery this work was intended to promulgate. As this curious work is very little known; a synopsis of its contents will, perhaps, not be deemed uninteresting.

The 1st chapter treateth—Of the *Magnes* or *Lodestone,* where thei are found, and of their colours, weight, and vertue in drawying iron, or steele, and of other properties of the same stone.

The 2nd chap. Of the diuers opinions of those that haue written of the *attractiue* poinct, and where thei haue imagined it to bee.

3d. By what meanes the rare and straunge *declinyng* of the Needle, from the plaine of the Horizon was first founde.

4th. How to finde the greatest declinyng of the Needle under the Horizon.

5th. That in the vertue of the *Magnes* or *Lodestone,* is no ponderous or weightie matter, to cause any suche *declinyng* in the Needle.

6th. A confutation of the cōmon receiued opinion of the point Attractiue.

7th. Of the poinct *Respectiue,* where it maie bee by greatest reason imagined.

8th. Certaine proofes of the power and action, wholie and freelie beeying in the stone, to shewe this poinct *respectiue,* and in the Needle, by vertue and power receiued of the *Stone,* and not forced, or constrained by any *Attraction* in Heauen or Yearth.

9th. Of the *Variation* of the Needle from the Pole or Axeltree of the Earth, and how it is to bee understoode.

10th. Of the common Compasses, and of the diuers different sortes and makynges of them, with the inconueniences that maie growe by them, and the plattes made by them.

After which followeth,

A table or regiment of the Sunnes declinatiō, exactly calculated unto the minute by the true place of the Sunne, whose greatest declination for this age is 23 degrees 28 minutes, and maie serve for 30 yeres without greate errour.

How to use the Sunne's declination, for knowing the elevation of the Pole.

Three Tables, the first sheweth the conjunctions of the Sunne and Moone for 19 yeres, with the Eclipses of the Sunne.

The seconde Table sheweth the hower and minute of the oppositions or full Moones, with the Eclipses of the Moone.

The third Table followeth the Kalender, by the whiche is always founde, what signe the Moone is in, with the helpe of the letters in the Kalender, also by the saied Kalender is shewed the hower and minute of the length of the daie for euery daie of the yere, for the eleuation of the Pole 52 degrees.

The body of the work, with the tables, occupy 62 pages, printed with black letter; exclusive of which, at the beginning are a dedicatory Epistle, an address to the Reader, and the Magnes or Lodestone's Challenge; which last I beg leave to lay before your readers.

THE MAGNES OR LODESTONE'S CHALLENGE.

Giue place, ye glitterying sparkes,
Ye glimmerying saphires bright,
Ye rubies redde, and diamonds braue,
Wherein ye moste delight.

In breefe, ye stones inricht,
And burnisht all with golde,
Set forthe in lapidaries shoppes
For jewells to be solde.

Giue place, giue place, I saie,
Your beautie, gleame and glee,
Is all the vertue for the whiche,
Accepted so you bee.

Magnes, the Lodestone, I,
Your painted sheathes defie,
Without my helpe, in Indian seas,
The beste of you might lie.

I guide the pilot's course,
His helpying hande I am,
The mariner delights in me,
So doeth the marchaunt man.

My vertue lyes unknowne,
My secrets hidden are,
By me, the court and commonweale
Are pleasured verie farre.

No shippe could saile on seas,
Her course to runne aright,
Nor compasse shewe the readie waie,
Were Magnes not of might.

Blush then, and blemishe all,
Bequeath to me that's dewe,
Your seates in golde, your price in plate,
Whiche jewellers doe renewe.

It's I, it's I, alone,
Whom you usurpe upon,
Magnes by name, the Lodestone cald,
The prince of stones alone.

If this you can denie,
Then seeme to make replie,
And let the painfull seaman judge,
The whiche of us doeth lie.

THE MARINER'S JUDGMENT.

The Lodestone is the stone,
The onely stone alone,
Deseruyng praise aboue the rest,
Whose vertues are unknowne.

THE MARCHANTE'S VERDICT.

THE saphire's bright, the diamōds braue,
Are stones that beare the name,
But flatter not, and tell the troth,
Magnes deserues the fame.

London, March 18, 1812. SIVAD.

SPECIMENS

OF THE SIMILARITY AND CONNECTION OF LANGUAGES.

(Continued from p. 49.)

IN Hebrew לאך, *lak*, signifies *an agent, a legate,* or *messenger; laki,* Ethiopic, *to send, to serve,* &c.; *lego,* Latin, *to send.* From the Hebrew come the English word *lackey;* Spanish, *lacayo;* French, *laquais;* Italian, *lacchè;* Portuguese, *lacayo;* Danish, *leckei.*

Gel, Persian; *gelid,* Chaldee, *to condense, to congeal,* (and as a substantive) *ice; τελα,* Greek; Latin, *gelidus, cold;* French, *gelé; gelid,* English.

As meadows parch'd, brown groves, and withering flow'rs
Imbibe the sparkling dew and genial show'rs;
As chill dark air inhales the morning beam,
As thirsty harts enjoy the *gelid* stream:
Thus, to man's grateful soul, from heav'n descend
The mercies of his Father, Lord, and Friend.

SIR WILLIAM JONES.

Bene, Saxon; *bon,* French; *boon,* Celtic; *boon,* English; all signifying *a good turn, a favour,* &c. It is worthy of notice, that *boonia,* in the Mandingo tongue, signifies a *present,* or *gift.* See the vocabulary of that language, in Mungo Park's Travels.

English, *rave;* French, *raver;* Dutch, *revan;* Swedish, *yra, to rave;* in Shanscrit, *rava;* signifies a *shriek* or a *loud cry.*

קבר, *kabar,* Hebrew, *to bury, to inter;* from whence the noun, קבורה, a *grave,* a *sepulchre.* In Persian, *khabgahe,* signifies *the place of the last sleep,* or the same as the English *cæmetry;* and the Greek *κοιμητήριον.* It has long ago been remarked, that *sleep* is the image of *death*; "*Somnus mortis imago*." *Sleep* and *death* are so apparently similar, that Galen * saith they are brother and sister. In the scriptures it is said, such-a-one *slept* with his fathers; and not such-a-one died. So the *iron-sleep* of the poets:

> Olli dura quies oculos et ferreus urget
> *Somnus* in æternam clauduntur lumina noctem.
>
> VIRG. ÆN. X.

> Death's *iron-slumbers* chased———
>
> WRANGHAM'S RAISING OF JAÏRUS'S DAUGHTER.

The words for *sleep* and *death* in the Madagascar tongue have a striking resemblance, the former being *mororo*, and the latter *moro*. Our English word, *grave*, may probably be derived from the old Gothic, *grubben*, to dig, or the Teut. *grab*.

Sabbat, Persian; *sabbate*, French; *sabato*, Italian; *sabbat*, German; *sâbado*, Spanish; all undoubtedly from the Hebrew, שבת, *to cease*, *to rest*, *to desist*, from labour.

Ειδω, Greek, *video*, *to see*; English, *eye*; Scottish, *een*, *eyes*; Saxon, Eaᵹ; French, *oeil*; Cimbric, *aug*; Gothic, *augo*; Swedish, *öga*; Belgic, *oog*; Sclavonic, *oko*; Danish, *age*; Spanish, *ojo*; Portuguese, *olho*; Feroese, *eyen*

עין, *oin*, Hebrew †, *an eye*, from the root, ענה, which signifies *acute*, *sensibility*, *weakness*, &c. because the *eye* is so *tender* and *delicate* an organ, and is so naturally *alarmed* when any thing approaches it, that it immediately closes. It is also affected, more or less, by all the passions. In Arabic, *æin*, *an eye*; Italian, *occhio*; Latin, *oculus*.

> ——— Divini signa decoris
> Ardentesque notate *oculos*. VIRG. ÆN. lib. v.

שמים, Hebrew, *heaven*; Ethiopic, *shamai*; Samaritan, *schamaim*; Tartarian, *schmaio*. Most of the European languages follow the Latin, *cælum*; *cielo*, Italian; *cielo*, Spanish; *o ceo*, Portuguese; *ciel*, French; *ceal*, Irish ‡.

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* See his Lib. de Caus: Pulsat. &c.

† Also the name of the sixteenth letter in the Hebrew alphabet.

‡ See Sir John Carr's "Stranger in Ireland," p. 330.

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Our English word is from the Saxon, heꝼan. It is remarkable, that the word *santo,* in the Mandingo tongue, signifies *heaven,* being exactly the same as the Italian word signifying *holy,* and not dissimilar to the *Latin.* See the Mandingo vocabulary, before referred to. Faðeꞃ, Saxon; *fader,* Belgic; *vatter,* Teutonic; *fader,* Danish; *fader,* Islandic; *pater,* Latin; *πατηρ,* Greek; *padre,* Italian; *fader,* Swedish; *pere,* French; *pay,* Portuguese; *péétre,* Shanscrit; *pader,* Persian; *father,* English. The Malay, *bapa,* father, bears a strong resemblance to the word used by *children* in this country.

Moðeꞃ, Saxon; *moder,* Danish; *mutter,* Teut.; *moeter,* Dutch; *mater,* Latin; *μητηρ,* Greek; *madre,* Spanish; *madre,* Italian; *moder,* Swedish; *may,* Portuguese; *mere,* French; *mader,* Persian; *matreé,* Shanscrit; *mama,* Bengalee; *mam,* Welsh; *muime,* Irish, a nurse; *ma,* Malay: *mother.*

Dagge, Belgic, *a dagger; dague,* French; *daga,* Spanish; *adaga,* Portuguese; *taghen,* German; *dagger,* English; דקר, *daker,* Hebrew, *to pierce, to wound; daghe,* Persian, *a wound.* In English poetry, *dagger* is often used metaphorically, for *pain, trouble, disquietude,* &c. Marcus, in Cato, says to his brother,

> Passion unpitied, and successless love,
> Plant *daggers* in my heart.——
>
> ADDISON'S CATO, ACT I. SC. I.

Bourde, Gaelic, a jest. Hence, perhaps, the English "*burden* of a song," or concluding verse, being the part which generally and principally carries the point or wit. I find in Bailey's English Dictionary, "*bord,* a jest, Spenser;" and also, "*borde,* a jest," with the authority of Chaucer; *bourd,* to jest, in the Scottish dialect. It is used in this sense by Ramsay, in his justly admired drama, entitled "The Gentle Shepherd." Glaud says to Peggy:

> Be wary then, I say, and never gie
> Encouragement, or *bourd* with sic as he.
>
> GENTLE SHEPHERD, ACT V. SC. I.

Adder, English; Æꝺꝺeꞃ, Saxon; *adder*, Dutch; *ether*, Scottish; *neider*, Welsh; *mar*, Persian; *an adder, a snake; mari*, or *mary*, in the Madagascar language, *a serpent.*

מר, Hebrew; *amarus*, Latin; *amer*, French; *amaro*, Italian. From the Hebrew also comes the Æolic, *μυῤῥα*; Latin, *myrrha;* English, *myrrh*. We have our English word, *bitter*, from the Saxon, Biꞇeꞃ.

Near Leeds, March 10, 1812. J.H.N.

(*To be continued.*)

ON GRAVITATION,

WITH AN OUTLINE OF LE SAGE'S HYPOTHESIS FOR EXPLAINING THE CAUSE THEREOF.

Mr. Frend, in his "Evening's Amusements," for the present year, and an intelligent writer under the signature "Common Sense," in a late number of the Monthly Magazine, have given some very interesting remarks on this subject; and as the public attention is in some degree fixed upon it, the following brief outline of a very ingenious hypothesis relative to the cause of gravity, may not be uninteresting to the readers of the Enquirer.

Some persons have supposed that to endeavour to account for all the operations of nature upon purely mechanical principles, will have a tendency to exclude the Deity from any concern in the government of the system, and thereby lay a foundation for the introduction of atheism. But in opposition to this opinion, let us place the names of Newton, Maclaurin, Sir John Pringle, and many others, whose piety no man ever questioned;—it is plain from a passage in Newton's Optics, that he had not the slightest idea that to ascribe the phenomena of gravitation to a mechanical cause, had any tendency to support atheistical opinions, or to weaken the arguments for the existence of God and of providence.

Every candid mind must be convinced that the issue of this argument is quite immaterial to the truths of natural religion, which must rest on the same immoveable foundation; whether the physical cause of gravity is ever discovered or not, we ought to feel no other interest in the result, than that which the extension or limitation of knowledge is calculated to excite. Every attempt to confine the range of our enquiries, and to produce an intolerance of philosophical opinion, deserves the most expressive disapprobation. In all ages there have been men illiberal and narrow-minded enough, to think that the search after natural causes was irreverent to the Author of nature, and argued a doubt of his power. Anaxagoras, though the first of the Greek philosophers who entertained rational notions concerning the Supreme Being, yet, because he was a great enquirer after second causes, was accused of irreligion. The same charge, on the same ground, has often been renewed since. It would be right, however, that those who bring this charge would take some trouble to draw the line which separates the legitimate domains of science, from the hallowed ground which must not be profaned by philosophical research. This boundary, we are persuaded, it will be found very difficult to adjust.—No one will say that it is wrong to enquire into the cause of elasticity, hardness, transparency, and such-like qualities of body;—Why then should it be improper to enquire into the cause of gravity? On what principle is it, that it is lawful to seek for the mechanism by which the former effects are produced, and impious to extend the same enquiry to the latter? If, indeed, gravitation were not only known, to be universal among material substances, but if all the other causes of motion could be reduced to it, and shown to be modifications of one and the same law, there would be little reason to expect that we could ever carry our enquiries much further; and though we should not think that there was any impiety in the attempt to do so, we should certainly despair of its success. But our knowledge of gravitation has by no means reached this perfection. We are not sure that it is quite universal; that heat and light, for example, are subject to its power; and, what is of more importance in the present question, we are sure that all the causes of motion have not been reduced to one; so that gravitation is neither shown to depend on impulse, nor impulse on gravitation. Two laws very different from one another direct the motions of the material world, and till these two can be reduced to one, or shown to depend on the same cause, or till they be demonstrated to arise from different causes, our knowledge of them remains incomplete. Till every possible means of effecting one or other of these purposes has been tried, till reason and experiment can fairly be said to have done their utmost, philosophy has not reached its ultimate object. Some important secret may still be within our reach; some new proof of the simplicity of nature, and of the wisdom of its author, may yet remain to be discovered. In the present state of science, we think that it cannot be affirmed that the utmost has been done with respect to the object we are treating of; nor are we entitled to say that the attempts made have been all completely abortive.

The different systems for explaining the cause of gravity, are those of Descartes, Bernoulli, Newton, Le Sage, and Boscovich. Concerning the system of Descartes, it is not necessary to enter into much detail. The vortices of that ingenious theorist have long ceased to afford satisfaction even to the most superficial reasoner. They are known now only in the history of opinions, and in that history will ever furnish a most instructive chapter. The next system that was imagined for explaining the law of gravitation, was that of an elastic ether, mentioned by Sir Isaac Newton in the queries at the end of his Optics, and proposed with such modesty and diffidence, as entitles it to great indulgence. It is the conjecture of the philosopher, who had demonstrated the existence of the law of gravitation, concerning the mechanism by which this universal tendency is produced, and seems to be thrown out with the view of preventing those who followed him, from thinking that it was sufficient to say that gravitation was an essential quality of matter, and that there was no occasion to trouble themselves about the cause of it. It was to serve as a stimulus to future enquiry, and as a caution against supposing that the fabric of physical astronomy was complete. According to it, the mutual tendency of bodies towards each other arises from the action of a fluid highly elastic, diffused through all space, but more rare within bodies than without, and more rare at a smaller distance from them than at a greater. Bodies are propelled through this fluid from the denser to the rarer parts, that is, from the parts where the elasticity is greater, to those where it is less. Thus, with respect to the earth, the elasticity of the circumfused ether being greater at a distance from that body than near it, other bodies would, by that greater elasticity, be urged to the quarter where the elasticity is less, that is, toward the earth. The same would hold of the sun and moon, and all the great bodies of the universe. This hypothesis, to which, it must be confessed that many objections may be made, appears to have been suggested to Newton by the phenomena of optics, which it is better calculated to solve than those of astronomy.

The system of John Bernoulli was proposed long after that of Newton, and intended by the author to unite the advantages of the Cartesian and Newtonian systems, without being subject to the difficulties of either; but which, in the general opinion of philosophers, does exactly the reverse, uniting the difficulties of both, without the advantages of either. The truth is, that John Bernoulli, though one of the first mathematicians of his age, was far from maintaining the same rank among philosophers. His theory of gravitation is accordingly almost forgotten, and is at present very little known, even to scientific men.

A fourth system, by far more ingenious and satisfactory than any of the three just mentioned, was proposed by Le Sage, in his "*Essai de Chimie Méchanique*," first published in 1758. This system is very little known; I shall therefore take the liberty of stating a short outline of it, as of the most curious and plausible attempt that has yet been made to account for gravity on principles purely mechanical.

Imagine that through all space numberless corpuscles, or atoms, almost infinitely small, are in perpetual motion: that every corpuscle has its determined direction, and moves for ever in a straight line, with a velocity far exceeding that of light. It is evident that the directions of these corpuscles may be so various, they may be themselves so small, and their velocity so great, that though they follow one another at vast distances, and leave space, in reality, almost empty, yet may they abound every where in such a manner, that in a portion of time almost infinitely small, a great number of them may pass through every point of space whatsoever. On whatever point of space, therefore, our attention is fixed, we may consider it as a centre, to which the motions of an infinite number of atoms are referred, either diverging from it, or converging to it.

This constitution of what Le Sage calls the *gravific fluid* being conceived, suppose a solid body to be plunged into it, of any figure whatsoever, larger than one of the corpuscles, and, in some degree, if not wholly, impervious to those corpuscles. This body will remain at rest, or at least without any progessive motion, the impulses from the corpuscles that strike against it being equal in opposite directions. It may oscillate a little backwards and forwards, but will not be forced from its place.

Now let there be plunged into the gravific fluid another body of any figure, and at any distance from the first. These two bodies will immediately begin to move toward one another: for the one serving to protect the other from a certain quantity of the impulsion of the corpuscles, the currents thus left without opposition necessarily produce their effect, and impel the bodies toward one another. Their motion toward one another will be continually accelerated; and the force producing that acceleration will increase in proportion as one body stops more of the currents from falling on the other; that is, nearly as the squares of the distances diminish.

Again, if the solid particles of which the bodies are made up be impenetrable to the gravific corpuscles, but the bodies themselves, on account of their porosity, permeable by them in a certain degree, the number of corpuscles that are stopped by each of the bodies will be, *cæteris paribus*, proportional to the number of solid particles, that is, to the quantities of matter within the bodies; and hence, in general, the force urging the bodies towards one another will be directly as their masses, and inversely as the squares of their distances. Thus, by mechanical action, the Newtonian law of gravitation is explained in all its parts.

The principal objection against this theory is grounded on the vast expense of *matter* required to uphold the existence of the gravific fluid. No particle of that fluid returns to its place, or ever passes a second time through the same point of space. A constant supply of new particles is therefore necessary, as all those that are contained within the limits of the sensible universe, at any instant, must be replaced long before they have entirely escaped from it, and gone forth to traverse for ever the deserts of uninhabited extension. The imagination is terrified at this constant exertion of what cannot be considered as less than creative power, employed in producing existences, that for a limited time are to be useful, and through all the rest of infinite duration are to serve no purpose whatsoever! The difficulty is indeed great, and we are still brought in sight of the CAUSE to which all others are subordinate, the CAUSE which all rational systems must acknowledge, and can only differ about the point where its immediate action begins, and beyond which secondary causes cannot be traced.

Boscovich's system does not, strictly speaking, assign the *cause of gravity*, but only generalizes the facts concerning the actions of bodies on one another, and reduces them all to one.

M. PHOSTON.

OBSERVATIONS ON THE DRY ROT.

I WAS led to pay much attention to the query respecting what is commonly called the Dry Rot in Wood, proposed in the first number of the Enquirer, from the circumstance of having injudiciously purchased a house, in which the timber was found to be much decayed by this disease; and however much I was gratified by the remarks in the 2d and 3d Numbers, I by no means consider those remarks as conclusive on the subject, and request the indulgence 6f submitting my own observations on this destructive phenomena.

I would just observe, by the way, that in the fourteenth Chapter of Leviticus there is an account of the *leprosy* of a house—Query, might not this be the *dry rot?*

Unquestionably the best mode of acquiring an exact knowledge of this distemper would be—

First, To study the general nature of the soil in which houses affected with the *dry rot* are built.

Secondly, The adventitious or accidental causes of the *dry rot.*

Thirdly, The effect of the *dry rot* on different kinds of *stone,* and other hard materials used in building.

Fourthly, The effect of the *dry rot* on timber, and the various kinds of timber most readily affected by it.

To these might be added, miscellaneous observations, containing an account of the peculiar effects of the *dry rot* in certain situations; and of the means used, with or without success, for preventing or curing timber affected with the distemper.

It is not without the greatest diffidence that I mention this arrangement, from a consciousness of the very imperfect manner in which I have been able to execute my own design; but many allowances will be made for the first essay on any subject.

The result of my observations, and the circumstances thereon attending is, that the cause of the *rot* in timber is derived from the ground; that the ground which produces this distemper is always *damp;* and that the *stone* most commonly used for paving floors does not interrupt the cause of the *rot.* My ideas of the nature and cause of this vegetable disease are, that although it is called by the general name of *rot,* or *dry rot,* it may perhaps be discovêred at some future time, that there are many varieties both of the distemper and its causes. The prevailing opinion is well known, that it is a species of vegetation, but without deciding with sufficient accuracy upon the primary or predisposing cause, or what the nature of that vegetation is. Some have supposed it to be of the animal kind, and probably because of the observation that places in which snails have been decayed, do not fail to produce mushrooms; which has led, if I mistake not, to a doubt whether mushrooms were of the animal or vegetable tribe; or because no man has yet been able to distinguish where the animal kingdom ends and the vegetable begins; or that no language can exactly define an animal from a vegetable, though every one can clearly distinguish them in his own mind. The first effect which earth capable of producing the *rot* shows, is its being continually moister than healthy earth, but the moisture is not the substance of the disease, no more than the matter of the small-pox is the infecting principle, which is of the most subtle nature, and only mixed or enveloped with the matter as its vehicle; so the moisture of earth impregnated with the *rot*, does not seem to be the principle of the rot, but is merely the vehicle or conductor of the miasmata or primary principles of that distemper. It would be worth while to try ground which produces the *rot*, as well as wood affected by it, with electric experiments, whether it abounds with, or is deficient in, electric fire; but there is a multiplicity of things which an ingenious man, who could spare time, might try, for the purposes of investigating either the cause or the effect of the *rot;* and if he had the sagacity or good fortune to discover a certain method of preventing it, he would do a very essential service to society.

A number of means have been proposed for the prevention of the disease in question, by applications to the timber itself; but I think we should be very cautious in applying substances to suspend the operation of the native principles, lest we introduce other principles of decay. It is probable, that keeping timber a sufficient length of time before it is employed, is the most advantageous method of preparing it.

Norwich, Jan. 16, 1812. J. KEMP.

REPLY TO PLINY's LETTER TO LICINIUS.

(See Enquirer, Vol. II. p. 79.)

The most probable cause of this curious phenomenon is, that some pipe or hollow in the earth, bent in the form of a syphon, communicates with the bottom of the fountain; and proceeding thence towards the Larian lake, opens at some place lower than the bottom of the fountain. Admitting this to be the case, when the water in the fountain has risen above the bend of the pipe, it will flow through into the lake; and will continue flowing until the fountain be emptied; it will then cease to flow, until the fountain be again filled above the bend of the pipe, when it will again begin to flow, and so on alternately; hence the cause of the phenomenon is evident.

Burstwick, March 16, 1812. W. ALLEN.

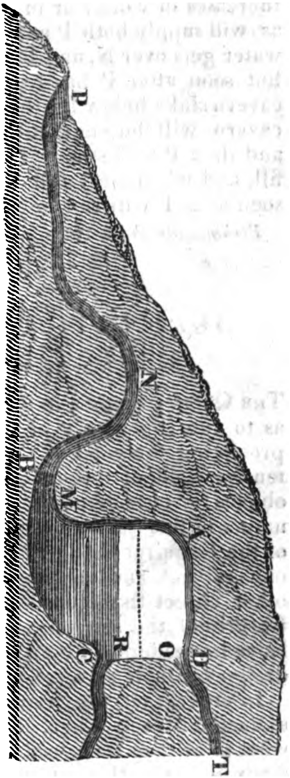
TO THE EDITORS OF THE ENQUIRER.

I send you the following extract from Encyclopœdia Britannica, in answer to Contributor.

" Certain springs or fountains are observed to have periods of repletion and scantiness, or seem to ebb and flow at regular intervals; and some of these periods are of a complicated nature. Thus a well will have several returns of high and low water, the difference of which gradually increases to a maximum, and then diminishes, just as we observe in the ocean. A very ingenious and probable explanation of this has been given in No. 424 of the Philosophical Transactions by Mr. Atwell as follows:

Let ABCD represent a cavern, into which water is brought by the subterraneous passage OT. Let it have an outlet MNP of a crooked form, with its highest part N considerably raised above the bottom of the cavern, and thence sloping downwards into lower ground, and terminating in an open well at P. Let the dimensions of this canal be such that it will discharge much more water than is supplied by TO.

All this is very natural, and may be very common. The effect of this arrangement will be a remitting spring at P, for when the cavern is filled higher than the point N, the canal M N P will act as a syphon; and by the conditions assumed, it will discharge the water faster than T O supplies it; it will therefore run it dry, and then the spring at P will cease to furnish water. After some time the cavern will again be filled up to the height N, and the flow at P will recommence. If, besides this supply, the well P also receive water from a constant source, we shall have a reciprocating spring.



The situation and dimensions of this syphon canal, and the supply of the feeder, may be such, that the efflux at P will be constant. If the supply increase in a certain degree, a reciprocation will be produced at P with very short intervals; if the supply diminishes considerably, we shall have another kind of reciprocation with greater intervals and great differences of water. If the cavern have another simple outlet R, new varieties will be produced in the spring P, and R will afford a copious spring. Let the mouth R, by which the water enters into it from the cavern, be lower than N, and let the supply of the feeding spring be no greater than R can discharge, we shall have a constant spring from R, and P will give no water. But suppose that the main feeder increases in winter or in rainy seasons, but not so much as will supply both P and R, the cavern will fill till the water gets over N, and R will be running all the while; but soon after P has begun to flow, the water in the cavern sinks below R; the stream from R will stop; the cavern will be emptied by the syphon canal M N P, and then P will stop The cavern will then begin to fill, and when near full R will give a little water, and soon after P will run, and R stop as before, &c.

Bocking, March 14, 1812. W. H.

AGRICULTURE AND COMMERCE

CONSIDERED AS NATIONAL ADVANTAGES.

THE Query proposed in the last number of the Enquirer as to the superiority of Commerce or Agriculture in promoting the good of this country, opens a very extensive field of discussion, and furnishes numberless objects for consideration. A full and elaborate examination of this question would take up more of the pages of the Enquirer than can reasonably be appropriated to one subject, and therefore this communication has no other object than to simply state the most prominent features of the subject, and from a hasty traced sketch leave its readers to fill up the picture, and complete the design by their own reflections and deductions.

In order that the writer and the reader may fully understand each other, it will be necessary to state what is or may be considered as implied by the words "advantage to this country;" they may be understood as signifying the political prosperity of the country relatively considered with regard to other countries; or they may imply the *quantum* of happiness enjoyed by the individuals who form that country; or they may relate to the facility afforded to luxurious gratification; this premised, the discussion is in some measure simplified, and the hazard of misapprehension partly removed.

For my own part, I have no ideas of national political prosperity, separate and distinctly independent of the happiness of those individuals who form a nation; and shall therefore consider the political prosperity of a community as correctly represented by the degree of comfort and personal happiness individually enjoyed. Other views respecting this branch of the subject may be entertained, but they would lead to discussion of a nature which the plan of the Enquirer would probably exclude. All who consider that personal comfort and individual happiness must generate contentment, satisfaction, and tranquillity, will not hesitate to admit that a diminution of these blessings will bring along with it murmuring, contention, and tumult; neither can it be denied that the power and political consequence of a nation depends upon the union of the people, and that external strength can only proceed from internal peace, or in other words, that the happiness of the people constitutes the political strength of a nation.

Proceeding to the consideration of the individual happiness respectively conferred by agriculture and commerce, it will be necessary to state as a fundamental axiom, that morality and rectitude of conduct are the only certain sources of happiness and mental satisfaction. Happiness, as an individual possession, can only consist in bodily health, and mental use; the first comprehends the capacity of enjoyment, and the latter is that enjoyment itself. In the primeval ages of the world, when the cultivation of the earth formed the great business of mankind; when their wants were confined, and their wishes and desires were limited to the possession of a few simple and necessary gratifications, disease was rare; the hoary headed peasant sunk down to his grave by the gradual decay of nature; and the lamp of life, though necessarily impaired in its brilliancy as its pabulum was exhausting, cast a cheerful light to the last, and its lambent flame expired with a momentary struggle.

Agriculture is eminently conducive to the advantage of those actively engaged in it, not only by its promoting their health and vigour, but in the tendency which it has to cherish in them a manly and ingenuous character; every improvement in the art must be considered as of high utility, not only as it facilitates the subsistence of a greater portion of rational and moral agents; but supposing the number to be stationary, it furnishes them with greater opportunities than could be possessed before, of obtaining that intellectual and moral enjoyment which is the most honourable characteristic of their nature. The strength of nations is in proportion to their skilful cultivation of the soil; and their independence is secured, and their patriotism animated, by obtaining from their native spot all the requisites for easy and vigorous subsistence; the people who suffer their attention to be withdrawn from the cultivation of the earth, to pursue projects of glittering but too often illusive and deceitful promise, will soon be dependant for their very subsistence upon the good will and forbearance of their neighbours; industry, which has failed through having a wrong direction, will sicken and become enfeebled; the habits of virtue and moral restraint, imposed and nurtured by the simplicity and innocence of agricultural pursuits, will be supplanted by unnatural and excessive desires, independence of character will bend beneath the pressure of disease and want, and a system of tyranny and servility be founded on the mouldering fabric of agricultural strength and virtue.

Let us compare the situation of a labouring cottager who earns his bread at the plough, with that of the manufacturer who spends his day at the loom; let us make a calculation of the relative happiness likely to be enjoyed by each; and attending to their habits, let us infer, as fairly as possible, which is the most important and useful member of society.

The ploughman rises with the sun, full of health and vigour; the objects around him are generally such as impress cheerful ideas, and the nature of his employment secures to a considerable degree his continuance in health; his daily labour affords him a sufficiency of wholesome food, his wants are few, and easily gratified; and though far removed from the means of luxurious enjoyment, and the acquisition of worldly wisdom, his life is spent in a cheerful succession of useful labour and contented repose, and his mind remains untainted with the maxims of the cold-blooded speculatist, the visionary theorist, or the gloomy fanatic. The manufacturer rises from his care-pressed pallet, and drags to his loom a body enervated by sedentary employments, and a mind rendered peevish and discontented by the pressure of poverty and the deprivation of personal comfort; during his long protracted hour of labour, "the blessed sun" never illuminates his pallid cheek, or the winds of heaven cool his feverish brow; immersed amongst hundreds of his fellow beings as wretched as himself, recourse is too often had to dissipation, to rob "care's barbed arrow of its sting;" and the earnings of his labour, instead of ministering to the real wants of himself and his family, are squandered in riotous excess. He beholds his employers and the favourites of fortune around him rolling in affluence; he sees them possessing luxuries whilst he lacks necessaries; discontent ensues. Again he flies to the intoxicating draught; then, roused by the remnant of native goodness and natural feeling still within him, he returns to his employment. Thus cheerless and unwholesome labour, with intervals of dissipated indulgence, form his miserable existence; discontented and gloomy, his mind is open to the suggestions and machinations of the designing; seeing wretchedness in its thousand shapes around him, he becomes indifferent as to the production of it, and suffering misery, and making miserable, appears to be the business of his life.

It will be said that the bright side of one employment is contrasted with the dark side of the other, and it will be asked, has the ploughman no pains? has the manufacturer no pleasures? There are no doubt numerous instances of misery in the cottage, and of happiness in the manufactory; but taking things in the aggregate, I am not aware that I have on either side been guilty of exaggeration in this sketch.

Here then is a manifest superiority as to the production of individual happiness to be attributed to agriculture; and as such, it is inferred that agriculture conduces more to the advantage of this country than commerce, from its very nature, possibly can do.

But if luxury contributes to happiness certainly commerce does also, for all our luxuries, or nearly so, are produced by commerce. Let any one think on the subject for a moment, and discussion will be unnecessary; the production of luxuries, it will be acknowledged by the impartial, has oppressed and degraded one half of mankind, whilst the enjoyment of them has enervated and debased the other half. The genealogy of national ruin may be drawn thus: commerce produces luxury, luxury effeminacy, oppression, and tyranny; these are the parents of weakness, discontent, and revolt; and any one of these three will prove an adequate progenitor of national ruin and destruction.

Granting the advocates of commerce all they can possibly require; admitting that it has no effect to diminish the quantity of happiness in the world, allowing that it conduces to many of our comforts; permitting it to possess the merit of extending civilization, arts, and sciences, (but that these are doubtful advantages let the example of the South Sea Islands teach) still the superiority of agriculture may be supported, inasmuch as it forms the very basis of existence, and is the foundation upon which the mighty fabric of commerce must be reared. N.

ON FEMALE EDUCATION*.

A GREAT deal has been said of the original difference of capacity between men and women; as if women were more quick, and men more judicious—as if women were more remarkable for delicacy of association, and men for stronger powers of attention. All this, we confess, appears to us very fanciful. That there is a difference in the understandings of the men and the women we every day meet with, every body, we suppose, must perceive; but there is none surely which may not be accounted for by the difference of circumstances in which they have been placed, without re-

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[*] Several of our friends and correspondents having expressed a desire that we would insert this article in the Enquirer, we gladly acquiesce with their request, confident that too much publicity cannot be given to the sentiments and opinions therein inculcated; it is extracted from the Edinburgh Review, vol. xv. p. 299, *et seq.* Ed.

ferring to any conjectural difference of original conformation of mind. As long as boys and girls run about in the dirt, and trundle hoops together, they are both precisely alike. If you catch up one half of these creatures, and train them to a particular set of actions and opinions, and the other half to a perfectly opposite set, of course their understandings will differ, as one or the other sort of occupation has called this or that talent into action: there is surely no occasion to go into any deeper or more abstruse reasoning, in order to explain so very simple a phenomenon. Taking it then for granted, that nature has been as bountiful of understanding to one sex as the other, it is incumbent on us to consider what are the principal objections commonly made against the communication of a greater share of knowledge to women, than commonly falls to their lot at present; for though it may be doubted whether women should learn all that men learn, the immense disparity which now exists between their knowledge, we should hardly think could admit of any rational defence. It is not easy to imagine that there can be any just cause why a woman of forty should be more ignorant than a boy of twelve years of age. If there be any good at all in female ignorance, this (to use a very colloquial phrase) is surely too much of a good thing.

Something in this question must depend, no doubt, upon the leisure which either sex enjoys for the cultivation of their understandings; and we cannot help thinking, that women have fully as much, if not more, idle time upon their hands than men. Women are excluded from all the serious business of the world; men are lawyers, physicians, clergymen, apothecaries, and justices of the peace; sources of exertion which consume a great deal more time than producing and suckling children; so that if the thing is a thing that ought to be done, if the attainments of literature are objects really worth the attention of females, they cannot plead the want of leisure as an excuse for indolence and neglect. The lawyer who passes his days in exasperating the bickerings of Roe and Doe, is certainly as much engaged as his lady who has the whole of the morning

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before her to correct the children and pay the bills. The apothecary, who rushes from an act of phlebotomy in the western parts of the town to insinuate a bolus in the east, is surely as completely absorbed as that unfortunate female who is darning the garment, or preparing the repast of her Esculapius at home; and, in every degree and situation of life, it seems that men must necessarily be exposed to more serious demands upon their time and attention than can possibly be the case with respect to the other sex. We are speaking always of the fair demands which ought to be made upon the time and attention of women; for, as the matter now stands, the time of women is considered as worth nothing at all. Daughters are kept to occupations in sewing, patching, mantua-making, and mending, by which it is impossible they can earn ten-pence a day. The intellectual improvement of women is considered to be of such subordinate importance, that twenty pounds paid for needle-work would give to a whole family leisure to acquire a fund of real knowledge. They are kept with nimble fingers and vacant understandings, till the season for improvement is utterly passed away, and all chance of forming more important habits completely lost. We do not therefore say that women have more leisure than men, if it be necessary that they should lead the life of artisans; but we make this assertion only upon the supposition, that it is of some importance women should be instructed; and that many ordinary occupations, for which a little money will find a better substitute, should be sacrificed to this consideration.

We bar, in this discussion, any objection which proceeds from the mere novelty of teaching women more than they are already taught. It may be useless that their education should be improved, or it may be pernicious; and these are the fair grounds on which the question may be argued But those who cannot bring their minds to consider such an unusual extension of knowledge, without connecting with it some sensation of the ludicrous, should remember, that, in the progress from absolute ignorance, there is a period when cultivation of mind is new to every rank and description of persons. A century ago, who would have believed that country gentlemen could be brought to read and spell with the ease and accuracy which we now so frequently remark; or supposed that they could be carried up even to the elements of ancient and modern history? Nothing is more common, or more stupid, than to take the actual for the possible; to believe that all which is, is all which can be; first to laugh at every proposed deviation from practice as impossible; then, when it is carried into effect, to be astonished that it did not take place before.

It is said, that the effect of knowledge is to make women pedantic and affected; and that nothing can be more offensive, than to see a woman stepping out of the natural modesty of her sex, to make an ostentatious display of her literary attainments. This may be true enough; but the answer is so trite and obvious, that we are almost ashamed to make it. All affectation and display proceed from the supposition of possessing something better than the rest of the world possesses. Nobody is vain of possessing two legs and two arms; because that is the precise quantity of either sort of limb which every body possesses. Who ever heard a lady boast that she understood French? For no other reason, that we know of, but because every body in these days does understand French; and though there may be some disgrace in being ignorant of that language, there is little or no merit in its acquisition. Diffuse knowledge generally among women, and you will at once cure the conceit which knowledge occasions while it is rare. Vanity and conceit we shall of course witness in men and women as long as the world endures; but by multiplying the attainments upon which these feelings are founded, you increase the difficulty of indulging them, and render them much more tolerable, by making them the proofs of a much higher merit. When learning ceases to be uncommon among women, learned women will cease to be affected.

A great many of the lesser and more obscure duties of life necessarily devolve upon the female sex. The arrangement of all household matters, and the care of children in their early infancy, must of course depend upon them. Now, there is a very general notion, that the moment you put the education of women upon a better footing than it is at present, at that moment there will be an end of all domestic economy; and that, if you once suffer women to eat of the tree of knowledge, the rest of the family will very soon be reduced to the same kind of aërial and unsatisfactory diet. These, and all such opinions, are referable to one great and common cause of error; that man does every thing, and that nature does nothing; and that every thing we see is referable to positive institution, rather than to original feeling. Can any thing, for example, be more perfectly absurd than to suppose that the care and perpetual solicitude which a mother feels for her children, depends upon her ignorance of Greek and mathematics; and that she would desert an infant for a quadratic equation? We seem to imagine, that we can break in pieces the solemn institution of nature, by the little laws of a boarding-school; and that the existence of the human race depends upon teaching women a little more, or a little less; that Cimmerian ignorance can aid parental affection, or the circle of arts and sciences produce its destruction. In the same manner, we forget the principles upon which the love of order, arrangement, and all the arts of economy depend. They depend not upon ignorance or idleness, but upon the poverty, confusion, and ruin which would ensue from neglecting them. Add to these principles, the love of what is beautiful and magnificent, and the vanity of display; and there can surely be no reasonable doubt but that the order and economy of private life is amply secured from the perilous inroads of knowledge.

We would fain know, too, if knowledge is to produce such baneful effects upon the material and the household virtues, why this influence has not already been felt? Women are much better educated now than they were a century ago; but they are by no means less remarkable for attention to the arrangements of their household, or less inclined to discharge the offices of parental affection. It would be very easy to show, that the same objection has been made at all times to every improvement in the education of both sexes, and all ranks, and been as uniformly and completely refuted by experience. A great part of the objections made to the education of women, are rather objections made to human nature than to the female sex: for it is surely true, that knowledge, where it produces any bad effects at all, does as much mischief to one sex as to the other; and gives birth to fully as much arrogance, inattention to common affairs, and eccentricity among men, as it does among women. But it by no means follows, that you get rid of vanity and self-conceit, because you get rid of learning. Self-complacency can never want an excuse; and the best way to make it more tolerable, and more useful, is to give it as high and as dignified an object as possible. But, at all events, it is unfair to bring forward against a part of the world an objection which is equally powerful against the whole. When foolish women think they have any distinction, they are apt to be proud of it; so are foolish men. But we appeal to any one who has lived with cultivated persons of either sex, whether he has not witnessed as much pedantry, as much wrong-headedness, as much arrogance, and certainly a great deal more rudeness, produced by learning in men than in women; therefore, we should make the accusation general, or dismiss it altogether; though, with respect to pedantry, the learned are certainly a little unfortunate, that so very emphatic a word, which is occasionally applicable to all men embarked eagerly in any pursuit, should be reserved exclusively for them: for, as pedantry is an ostentatious obtrusion of knowledge, in which those who hear us cannot sympathise, it is a fault of which soldiers, sailors, sportsmen, gamesters, cultivators, and all men engaged in a particular occupation, are quite as guilty as scholars; but they have the good fortune to have the vice only of pedantry, while scholars have both the vice and the name for it too.

Some persons are apt to contrast the acquisition of important knowledge with what they call simple pleasures; and deem it more becoming that a woman should educate flowers, make friendships with birds, and pick up plants, than enter into more difficult and fatiguing studies. If a woman has no taste and genius for higher

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occupations, let her engage in these, to be sure, rather than remain destitute of any pursuit. But why are we necessarily to doom a girl, whatever be her taste or her capacity, to one unvaried line of petty and frivolous occupation? If she is full of strong sense, and elevated curiosity can there be any reason why she should be diluted and enfeebled down to a mere culler of simples, and fancier of birds? Why books of history and reasoning are to be torn out of her hand; and why she is to be sent, like a butterfly, to hover over the idle flowers of the field? Such amusements are innocent to those whom they can occupy; but they are not innocent to those who have too powerful understandings to be occupied by them. Light broths and fruits are innocent food only to weak or to infant stomachs; but they are poison to that organ in its perfect and mature state. But the great charm appears to be in the word *simplicity*—simple pleasures! If by a simple pleasure is meant an innocent pleasure, the observation is best answered by showing, that the pleasure which results from the acquisition of important knowledge is quite as innocent as any pleasure whatever; but if by a simple pleasure is meant one, the cause of which can be easily analized, or which does not last long, or which in itself is very faint, then simple pleasures seem to be very nearly synonymous with small pleasures; and if the simplicity were to be a little increased, the pleasure would vanish altogether.

As it is impossible that every man should have industry or activity sufficient to avail himself of the advantages of education, it is natural that men who are ignorant themselves, should view, with some degree of jealousy and alarm, any proposal for improving the education of women. But such men may depend upon it, however the system of female education may be exalted, that there will never be wanting a due proportion of failures; and that after parents, guardians, and preceptors, have done all in their power to make every body wise, there will still be a plentiful supply of women who have taken special care to remain otherwise; and they may rest assured, if the utter extinction of ignorance and folly is the evil they dread, that their interests will always be effectually protected, in spite of every exertion to the contrary.

We must in candour allow, that those women who begin, will have something more to overcome than may probably hereafter be the case. We cannot deny the jealousy which exists among pompous and foolish men, respecting the education of women. There is a class of pedants, who would be cut short in the estimation of the world a whole cubit, if it were generally known that a young lady of eighteen could be taught to decline the tenses of the middle voice, or acquaint herself with the olic varieties of that celebrated language. Then women have, of course, all ignorant men for enemies to their instruction, who being bound, (as they think) in point of sex, to know more, are not well pleased, in point of fact, to know less. But, among men of sense and liberal politeness, a woman, who has successfully cultivated her mind, without diminishing the gentleness and propriety of her manners, is always sure to meet with a respect and attention bordering upon enthusiasm.

There is in either sex a strong and permanent disposition to appear agreeable to the other: and this is the fair answer to those who are fond of supposing, that an higher degree of knowledge would make women rather the rivals than the companions of men. Presupposing such a desire to please, it seems much more probable, that common pursuit should be a fresh source of interest, than a cause of contention. Indeed, to suppose that any mode of education can create a general jealousy and rivalry between the sexes, is so very ridiculous, that it requires only to be stated in order to be refuted. The same desire of pleasing, secures all that delicacy and reserve which are of such inestimable value to women. We are quite astonished, in hearing men converse on such subjects, to find them attributing such beautiful effects to ignorance. It would appear, from the tenor of such objections, that ignorance had been the great civilizer of the world. Women are delicate and refined, only because they are ignorant; they attend to their children only because they know no better. Now, we must really confess, we have all our lives been so ignorant as not to know the value of ignorance. We have always attributed the modesty and the refined manners of women, to their being well taught in moral and religious duty; to the hazardous situation in which they are placed; to that perpetual vigilance which it is their duty to exercise over thought, word, and action; and to that cultivation of the mild virtues, which those who cultivate the stern and magnanimous virtues, expect at their hands. After all, let it be remembered, we are not saying there are no objections to the diffusion of knowledge among the female sex. We would not hazard such a proposition respecting any thing; but we are saying, that, upon the whole, it is the best method of employing time; and that there are fewer objections to it, than to any other method. There are, perhaps, fifty thousand females in Great Britain, who are exempted by circumstances from all necessary labour; but every human being must do *something* with their existence; and the pursuit of knowledge is, upon the whole, the most innocent, the most dignified, and the most useful method of filling up that idleness, of which there is always so large a portion in nations far advanced in civilization. Let any man reflect, too, upon the solitary situation in which women are placed; the ill treatment to which they are sometimes exposed, and which they must endure in silence, and without the power of complaining; and he must feel convinced that the happiness of a woman will be materially increased, in proportion as education has given to her the habit and the means of drawing her resources from herself.

There are a few common phrases in circulation respecting the duties of women, to which we wish to pay some degree of attention, because they are rather inimical to those opinions which we have advanced on this subject. Indeed, independently of this, there is nothing which requires more vigilance than the current phrases of the day, of which there are always some resorted to in every dispute, and from the sovereign authority of which it is often vain to make any appeal. "The true theatre for a woman is the sick chamber." "Nothing so honourable to a woman as not to be spoken of at all." These two phrases, the delight of *Noodledom*, are grown into common-places upon the subject, and are not unfrequently employed to extinguish that love of knowledge in women which, in our humble opinion, it is of so much importance to cherish. Nothing, certainly, is so ornamental and delightful in women as the benevolent virtues; but time cannot be filled up, and life employed, with high and impassioned virtues. Some of these feelings are of rare occurrence—all of short duration—or nature would sink under them. A scene of distress and anguish is an occasion where the finest qualities of the female mind may be displayed; but it is a monstrous exaggeration to tell women that they are born only for scenes of distress and anguish. Nurse father, mother, sister, and brother, if they want it;—it would be a violation of the plainest duties to neglect them. But, when we are talking of the common occupations of life, do not let us mistake the accidents for the occupations; when we are arguing how the twenty-three hours of the day are to be filled up, it is idle to tell us of those feelings and agitations above the level of common existence, which may employ the remaining hour. Compassion, and every other virtue, are the great objects we all ought to have in view; but no man (and no woman) can fill up the twenty-four hours by acts of virtue. But one is a lawyer, and the other a ploughman, and the third a merchant; and then, acts of goodness, and intervals of compassion and fine feeling, are scattered up and down the common occupations of life. We know women are to be compassionate, but they cannot be compassionate from eight o'clock in the morning till twelve at night. And what are they to do in the interval? This is the only question we have been putting all along, and is all that can be meant by literary education.

Then again, as to the notoriety which is incurred by literature. The cultivation of knowledge is a very distinct thing from its publication; nor does it follow that a woman is to become an author, merely because she has talent enough for it. We do not wish a lady to defend and reply; to squabble about the tomb of Achilles, or the plain of Troy; any more than we wish her to dance at the opera, to play at a public concert, or to put pictures in the Exhibition, because she has learned music, dancing, and drawing. The great use of her knowledge will be, that it contributes to her private happiness. She may make it public; but it is not the principal object which the friends of female education have in view. Among men, the few who write bear no comparison to the many who read. We hear most of the former indeed, because they are, in general, the most ostentatious part of literary men; but there are innumerable men, who, without ever laying themselves before the public, have made use of literature to add to the strength of their understandings, and to improve the happiness of their lives. After all, it may be an evil for ladies to be talked of: but we really think those ladies who are talked of, only as Miss Edgeworth, Mrs. Barbauld, and Mrs. Hamilton are talked of, may bear their misfortunes with a very great degree of Christian patience; and such singular examples of ill fortune may, perhaps, render the school of adversity a little more popular than it is at present.

Their exemptions from all the necessary business of life, is one of the most powerful motives for the improvement of education in women. Lawyers and physicians have in their professions a constant motive to exertion; if you neglect their education, they must, in a certain degree, educate themselves by their commerce with the world; they must learn caution, accuracy, and judgment, because they must incur responsibility. But if you neglect to educate the mind of a woman, by the speculative difficulties which occur in literature, it can never be educated at all; if you do not effectually rouse it by education, it must remain for ever languid. Uneducated men may escape intellectual degradation; uneducated women cannot. They have nothing to do; and if they come untaught from the schools of education, they will never be instructed in the school of events.

(To be continued.)

ON SOPHISMS.

(Continued from vol. ii. p. 57.)

SOPHISM 4.

Imperfect enumeration.

THERE is no vice of argument into which the learned fall more easily, than into this of false enumeration, and of not duly considering all the manners how things may be, or be effected; which makes them conclude rashly, either that it is not, because it is not in such a manner, though it may be after another manner; or else that it is after such or such a manner, when it may be after another manner than they have yet thought of.

We may find several of these defective arguments in the proofs upon which Gassendus establishes the ground of his philosophy, *viz.* that vacuum is interspersed between the parts of matter, which he calls disseminated vacuum. And I am the more willing to produce them, in regard that Gassendus having been a famous person in his time, and of great knowledge in the most curious parts of learning, the errors and failings which are to be seen scattered in many great volumes of his works, published after his death, are therefore the more worthy to be known and discussed; whereas it would be to no purpose to take notice of the errors so frequent in authors of no account.

The first argument which Gassendus employs to prove his disseminated vacuum, and which he would make us believe to be as certain as mathematical demonstration, is this:

If there were not a vacuum, but that all space were filled with bodies, motion would be impossible, and the world would be a mere heap of stiff, inflexible, and immovable matter. For the world being all full, no body could be moved but it must go into the place of another. Thus if the body A be moved, it must displace another body B, at least equal to it, and B, removing, must displace another. Now this can happen only in two ways; one, that the displacing of bodies must extend itself to infinity, which is ridiuclous and impossible: the second, that the motion must be circular, that so the last body removed may supply the place of A.

Hitherto no imperfect enumeration appears; and it is true, moreover, that it is a ridiculous thing to imagine, that one body being removed, other bodies by removing, successively displace one another to infinity: but it is held that the motion is circular. and that the last body, being removed, possesses the place of the first, which is A, and so the whole is full. And this is that which Gassendus undertakes to refute by the following argument. The first body removed, which is A, cannot be moved if the last, which is X, do not move. Now X cannot move, for that if it moves it must possess the place of A, which is not yet void; and so X not being able to move, neither can A; for which reason the whole must be immoveable. All which argument is founded only upon this supposition, that the body X, which is immediately before A, cannot be removed unless the place of A be void beforehand, when it begins to move. So that before the instant that it possesses that place, there may be said to be another in which it is a vacuum.

But this supposition is false and imperfect; for there is yet another case wherein it is very possible that X may be moved; that is to say, at the same instant that it possesses the place of A, A may quit that place, and, in that case, there will be no inconvenience if A pushes B forward, and B thrusts forward C till they come to X, and X at the same time possesses the place of A. For by this means there will be a motion, and yet no vacuum.

Now, that it is possible that a body may possess the place of another body at the same instant that this other body leaves it, is a thing which we are obliged to confess, whatever hypothesis we may adopt, provided only that we admit the motion of some continued matter. For example, in two parts of a staff, immediately contiguous, it is evident that at the same time that the place is quitted by the first, it is possessed by the second, and that there is no instant wherein there can be said to be a vacuum.

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But this is more clearly shown by an iron circle that turns about its centre: for then, at the same instant, every part possesses the space which was quitted by that which went before, with that celerity that will admit no vacuum, so much as to be imagined. Now if this be possible in a circle of iron, shall it not be the same in a circle partly of wood and partly of air? And therefore the body A, supposed to be of wood, pushing forward and displacing the body B, supposed to be of air, why may not B displace another, and that another, to X, which shall enter into the place of A, at the same instant that A quits it.

It is clear then, that the said error in the reasoning of Gassendus proceeds from hence, that Gassendus thought that one body could not possess the place of another, unless the place were void beforehand, and in a preceding instant; not considering that there was the same instant of quitting and possessing.

Sophism 5.

To judge of a thing which only agrees with it by accident.

This Sophism is called in schools *fallacia accidentis,* the fallacy of the accident, when we draw an absolute conclusion, simple and without restriction, from what is true only by accident. This is that which causes some people to exclaim against antimony, because that, being ill applied, it produces bad effects: and that others attribute to eloquence all those bad effects which the abuse of it produces; and to physic, the faults of ignorant doctors.

We fall into this vicious way of arguing when we take simple occasions for real causes; as if we should accuse the Christian religion for having been the cause of the massacre of so many multitudes, who rather chose to suffer death than renounce Christ; whereas, we are not to impute those murders to the Christian religion, nor to the constancy of the martyrs, but only to the injustice and cruelty of the pagans.

We also find a considerable example of this sophism in the ridiculous arguments of the Epicureans, who concluded that the gods had human shape, because that only man is indued with reason.

The gods, say they, are most happy. None can be happy without virtue. There is no virtue without reason. And reason is found no where but in human form: we must therefore confess the gods to be of human shape.

But they were strangely blind not to see that the substance which thinks and reasons, may be joined to the body. 'Tis not human shape that causes thought and reason in man. It being ridiculous to imagine that thought and reason depend upon a man's having a nose, a mouth, two cheeks, two arms, two hands, two feet, &c. And therefore it was a childish sophism of those philosophers to conclude, that there could be no reason but in human shapes; it being only joined by accident to human shape in man.

Sophism 6.

To pass from sense divided to sense composed, or from sense composed to sense divided.

The one of these sophisms is called fallacy of composition, and the other fallacy of division, which are both apprehended better by examples.

Jesus Christ saith in his gospel, speaking of his miracles, the blind see, the lame walk, the deaf hear. This cannot be true, while we take things separately and not conjointly, that is to say, in a sense divided, and not in a sense composed. For the blind see not while they are blind, neither do the deaf hear while they remain so; but only after they had recovered their sight and hearing by the miracles of Christ.

In the same sense it is said in scripture, that God justifies the wicked. Not that He accounts those for just who abide in their wickedness; but that, by his grace, he justifies those who were impious before.

On the other side, there are some propositions which are not true, but in a sense opposed to that which is the sense divided. As when St. Paul says, that slanderers, fornicators, and covetous men, shall not enter into the kingdom of heaven. For it is not meant that none of those who are guilty of those vices shall be saved; but only those who remain impenitent, and obstinately go on in their sins, shall not enter into the kingdom of heaven.

It is manifest now, that there is no transition from one of these senses to the other without a sophism. And, for example, it is evident that they would argue very ill that should hope for heaven, while they persevere in their sins, because Christ came to save sinners; and because he says, that wicked women should precede the pharisees in the kingdom of heaven; seeing that he did not come to save sinners abiding in their sins, but to teach and admonish them to forsake their sins.

SOPHISM 7.

To pass from what is true in some respect, to what is simply true.

This is called in the schools, *à dicto secundum quid ad dictum simpliciter*. And the Epicureans fall into this sophism, when they would prove that the gods had human shape because there is no form so lovely as that, and because all that is lovely ought to be in God. For human form is not absolutely beautiful, but only in respect of other bodies; and so being a perfection only *secundum quid,* or in some respect, and not simply, it does not follow that it ought to be in God because all perfections are in God, there being no perfections but what are simply so; that is, which exclude all manner of imperfection that can be ascribed to God.

We find also, in Cicero, lib. iii. *De Natura Deorum,* a ridiculous argument of Cotta against the existence of God, which may be reduced to this sophism: "How," says he, "can we conceive of God, when we can attribute no virtue to him? for shall we say that he has prudence? prudence consists in the choice of good and evil: now God can have no need of this choice, not being capable of any evil. Shall we say that he has understanding and reason? we make use of understanding and reason to discover what is unknown to us, by what we know; now there can be nothing unknown to God. Nor can justice be in God, which only relates to human society; nor temperance, because he has no pleasures to govern; nor fortitude, for that pain never oppresses God, nor labour wearies him; and, besides, he is exposed to no danger. How, then, can that be God which has neither understanding nor virtue?"

Nothing can be conceived more impertinent than this manner of arguing. For thus might any countryman discourse, who, never having seen any other than thatched houses, and having heard that in cities there are no houses covered with thatch, should thence conclude that there are no houses in cities, and that they who live in cities are miserably exposed to all the injuries of the weather. For thus Cotta, or rather Cicero argues. There can be no virtues in God like to those which are in men; therefore, there can be no virtue in God. And what is more wonderful, is this; that he concludes that there is no virtue in God, only because the imperfections of human virtue cannot be in God. So that it is one of his proofs that God wants understanding and knowledge, that all things are known to him. And that God sees nothing, because he sees all things; that he is powerless because he is omnipotent; and that he enjoys nothing of happiness, because he enjoys all felicity.

SOPHISM 8.

To abuse the ambiguity of words because it may be done divers ways.

To this sort of sophisms may be referred all syllogisms that are vicious, whether it be that the middle term is taken in one sense in the first proposition, and in another sense in the second, or whether the terms of the conclusion be not taken in the same sense as they are in the premises. For ambiguity is not restrained to the words which are grossly equivocal, for they rarely fail; but extends to whatever can change the sense of words, especially when men are not easily aware of the change, in regard that divers things being signified by the same sound, they take them for the same thing. The remedy against which confusion of ambiguous words is, to define them so clearly that no man can be deceived.

I shall therefore produce some examples of this ambiguity that many times deceives men of ripe apprehensions. Such is that which is found in words that signify some whole, which may be taken either collectively or distributively; thus ought the sophism of the stoics to be resolved, who argued that the world was an animal endued with reason.

For that which has the use of reason is better than that which has not.

Now there is nothing, say they, better than the world.

Therefore the world hath the use of reason.

The minor of this argument is false; because they attribute to the world, what can only be ascribed to God, who is that Being, than whom there is nothing better, nor more perfect. But if it be spoken of created things only, nothing can be more perfect than the world, if it be collectively taken for the universe. But hence it can only be inferred, that the world is endued with reason, in some of its parts, as angels and men; but conjunctively it cannot be said to be a rational animal.

It would also be a bad way of arguing to say, that a man thinks, and a man is composed of soul and body, therefore the soul and body think. For it is sufficient to say that a man thinks, when only one part of him thinks; from whence it no way follows that the other part thinks.

MY LUMBER-ROOM.

(Continued from vol. ii. p. 45.)

Turning my eyes on my black attendant, I could not avoid starting at the wildness of his countenance. Had he appeared before me at our first interview with such distorted angry features, far from having associated with, I would have fled from him, as from the serpent's hiding-place. Reader! have you any idea of the terrific and vivid flashes darting from the eyes of the queen of the wilderness when her young are threatened by the bold hunter? Have you ever witnessed the bull-dog furiously rushing on his fierce assailant? Can you represent to yourself ferocity personified? If not you cannot trace to your mind's eye the faithful, and I may add, the frightful, picture exhibited by Domingo. Fearing that the least delay might be attended with fatal consequences, I hastened to go out, and it was not without a certain degree of violence that I could remove the black from a scene which seemed to have concentrated all at once the whole of his most energetic faculties into that single one—fury.

I was well aware that any explanation would have been then out of its place; and in order to give the poor fellow time to recover from the storm that raged in his mind, I conversed for a time with my young friend, from whom, on inquiry, I learned the cause of that flogging we had so very nearly witnessed. He told me that one had torn a leaf of his grammar; another had negligently written his copy; a little bullet of paper intended by the third for a boy opposite, had unluckily hit the master; a fourth had mimicked the stammering of the head usher; the fifth had been caught playing at marbles during the school hour; and the last had endeavoured by a lie to avoid punishment of an offence he had committed. I dismissed my young friend, and left the school-yard. Observing that the most violent emotion, by which Domingo's mind had been so vehemently agitated, had in a great measure subsided, I began with him the following colloquy.

Self. Well, friend! you do not seem to be very highly pleased with our late visits.

Domingo. Massa! me run away as fast as my legs can carry me. This a country of liberty! this a country of christians! this a country that is so vociferous against the inhumanity of the white men abroad against negro slaves! Me have lived many years in Jamaica, Guadaloupe, and other islands; me have served several masters; me have seen a great deal in those islands, but me can take my oath that I never witnessed such an horrible abuse of authority and such unnatural

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cruelty. Out of the numerous lashes distributed amongst my sable brethren there may be a few that are to be placed to the account of whim, caprice, or barbarity; but most of these lashes are justly inflicted on idleness and other real vices. Their number, it is true, transgress sometimes the bounds of mercy, but negro man has sufficient strength, and fortitude too, to bear them. Negro slave besides is aware of that which he has to expect when swerving from his duty: he has, or ought to have, sense enough to submit to his situation, and to endeavour to render it as comfortable as it may be. But a child is naturally heedless and giddy; he has not yet the full enjoyment of his reason; his judgment is not yet matured by experience; his ignorance ought to be his excuse, his weakness his shield. A single smile of infantine innocence, a single pearly tear moistening the rosy cheeks of the little cherub, would suddenly appease the most violent emotion of my soul.

Had I not interrupted him, he would undoubtedly have gone on much longer in that strain, and given further vent to his feelings that seemed sorely wounded.

Self. But, my good fellow, granting that which you alledge in favour of children, Don't you think that it behoves parents and others intrusted with the education of youth, to correct them when they depart from those rules, or deviate from those principles so essential to the welfare of the society of which they are to become members? Don't you admit that if correction be necessary to inculcate in their young minds those ideas of propriety, of morality, and of religion, those rudiments of learning which will enable them to become useful to that society, and pave the way to their future fame, power, riches, and thereby insure their future welfare; don't you think, if, by means of timely and efficient correction, we can attain those most desirable ends, that correction is not only allowable, but even a duty incumbent on parents and masters?

Dom. If correction were the only means of obtaining those ends, which by the bye are not yet proved to be the sole foundation of human happiness, I might perhaps answer *yes* to your question. But are not other ways to be found by which youth might be led to virtue and wisdom, by which their minds might be impressed with the utility and advantage of learning? Are there no other means more congenial with human feelings, and especially with that lively interest which tender age naturally inspires even in the breast of a stranger, and which ought still more to reign paramount in that of parents? Or is that affection so generally, so powerfully, felt by the brute creation erased out of the bosoms of white men?

Self. Undoubtedly there may be, and there are, indeed, other ways and means; but if not more uncertain, at least they would be attended with a great deal more fatigue and pains.

Dom. Oh! massa! now me understand you. You think in this country that flogging is much less troublesome than any other course that might lead to the desired end. Me agree with you, indeed, that fear is a powerful and even efficient engine. Me agree also, that it would require far greater exertions to watch the progress of every propensity and little passion that begins to bud even in the cradle; to rectify those ideas that are successively formed in the child's mind; to inculcate good principles more by example than by precept; to forward the native and dawning dispositions of the little man, by seizing every opportunity to communicate knowledge: to direct his natural impulses to good by motives of a more honourable tendency than that of fear; to till carefully the ground, sow betimes the seeds of virtue, drive away those birds that would greedily feed on them, root out the noxious weeds that might smother the young shoots, and never to relax our watchfulness until those seeds, having passed through the whole process of vegetation, have attained their full maturity, and the harvest safely harboured. All this is certainly attended with a great deal of trouble, of care, and of fatigue. But what are these troubles, cares, and fatigues compared with those of the aspiring hero who seeks fame and renown amidst toils infinitely greater, with the addition of perpetual dangers? What are these troubles, cares, and labours,

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to those of the ambitious who wade through thick and thin, through dirt and mire to acquire power? What are they to those of that miser whose days are spent in heaping gold upon gold, and whose nights are dedicated to the watching of his useless treasures? But without carrying on these comparisons as to the means, let us pass to their result. The aspiring hero is suddenly cut off in his career, and leaves behind him that fame which was the object of all his toils, without having ever enjoyed it. The ambitious becomes the victim of his own schemes, and leaves to more happy or more fortunate rivals the object for which he had made so many sacrifices. The miser who from day to day adjourned the enjoyment of his dearly-bought riches, never sees that fortunate day, and dies with the cankering idea that his heaps of precious metals are about to pass into the hands of another. He, on the contrary, who has religiously performed the most sacred of duties, that of a parent; he who having accepted the holy and important trust of guiding helpless and erring youth through the labyrinth that will perplex it in its journey towards dignified manhood, although he may encounter numberless difficulties, although he may find in his way steep acclivities, deep valleys, threatening torrents, meets at last with the purest, the noblest, the most glorious reward. Let death come when it will he is sure that the fruit of his labours will not be buried with him. He is conscious that his place will be taken by a *man*, and a man, if not of his own creation, at least of his own formation. He reflects with pride that his deeds, though not trumpetted by noisy fame, will probably be productive of less brilliant but more useful effects on successive generations. His conscience will anticipate the merciful sentence of his Sovereign Judge; he submits cheerfully to the inevitable call, and dies in peace with himself.

ON REASON AND INSTINCT.

IN REPLY TO QUERY 41, P. 92, VOL. II. ENQUIRER.

To resolve this question it is necessary first to ascertain what reason and instinct are in themselves.

And I shall endeavour first to define instinct, a quality which is undoubtedly equally inherent in the brute as in the human species. By instinct is meant that innate motive, alike unsought and irresistible, which is implanted in every creature, from that grand masterpiece of the Almighty mechanist's creation, man! to the minutest animalcule, which floats imperceptibly in the air we breathe. This imperious motive, this unknown spring of action, operates alike in every creature; in all it seeks that which is necessary for the support and comfort of animal life, whether brute or human; in all it loaths, and demonstrates antipathy for, which nothing but nature or instinct could cause. Does not an infant, the moment it is born, feel and express pain; seek its natural food, and mark its dislikes to particular tastes or situations? yet is this reason? I think there has never been a philosopher hardy enough to hazard such an assertion. But it may be said, these are the dawnings of reason, which strengthen with the growth of the human infant, and by degrees attain their utmost perfection. I am rather inclined to differ from this opinion, inasmuch as idiots, or maniacs, though they grow to maturity of size and strength, never arrive at any thing like reason. And this leads me to consider, secondly, what reason is?

Reason may be defined to be that faculty of the mind by which we are enabled to choose aright, and to reject what is wrong, even in defiance of our strongest biasses and passions. It is the immediate emanation of the Divinity, the only real distinction which can be said visibly to exist between the brute and the human species. It is the offspring of reflection, a faculty distinct from perception, memory, sight, hearing, or feeling; all which animals have in common with mankind. For instance, a child in a state of nature will touch fire, run into water, or take poison, with the same thoughtless temerity which a cat or a dog would do, and, in common with those creatures, when it has found the danger, will remember and do so no more. But when the faculties of a child are sufficiently expanded to understand the force of words, you may argue with it, and persuade it to avoid those things

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which are hurtful, even though they are pleasing, or to do what is disagreeable under the conviction that it is right. Now an animal, even a dog, which is the most tractable of all, cannot be persuaded by words, nor could all the fondest caresses induce him to forbear to do that which he desires, or induce him to do that which he dislikes; it is fear alone which will have these effects upon him.

Thus it appears that animals have passions and perceptions, but not reason. It is no proof of reason that a duck swims, that a fish opens its gills for respiration; on the contrary, it is an impulse which it cannot resist: and the same may be said of every animal that performs the functions for which it was created, and which it does from the first moment of its existence, or nearly so: whereas man cannot do any thing until he be taught. It may be objected, that beavers, ants, and bees, are instances of animals performing acts superior to the common order of brute creatures, and that their labours fall little short of, or indeed may be almost said to excel the ingenuity of man. Yet this does but support the argument in favour of instinct; since if reason or reflection had any share in these operations, they could not have been performed since the creation by such a numerous succession of creatures, without variation or improvement: and if these operations of animals are to be accounted reasonable, why not as well imagine that the automaton who played at chess, and beat the greatest professors of the art, was actually endowed with reason? since it is evident that the same mechanical force is necessary to actuate the one as the other. Life being the key which winds up the animal mechanism, which continues its operations with equal precision, until accident or force puts a stop to them, I could add a thousand instances to prove the force of instinct in brutes, and that reason is alone confined to mankind: but I hope the foregoing observations will be sufficient to prove the immense difference between the two natures in this respect.

Let us then adore the wisdom of God in this, as in all his other works: for, as Pope beautifully expresses it,—

> The lamb thy riot dooms to bleed to day,
> Had he thy reason, would he skip and play?

On the contrary, man, who is permitted to know his dangers, to see the precipice on which he stands, and from whose tottering height he is sensible he must fall, looks unappalled upon the hideous prospect, since reason tells him that the miseries he suffers here, if borne with fortitude, and not incurred by guilt, will lead him to a happier and a lasting immortality.

Boston, March 19, 1812. VERITAS.

Extract from "Strutt's Sports and Pastimes of the People of England" relating to the Origin, &c. of Cock-fighting.

"This barbarous pastime, which claims the sanction of high antiquity, was practised at an early period by the Grecians, and afterward by the Romans: with us, it may be traced back to the twelfth century; at which period we are certain it was in usage, and seems to have been considered as a childish sport. "Every year," says Fitzstephen, "on the morning of Shrove-Tuesday, the school-boys of the city of London bring *game cocks* to their masters, and in the fore part of the day, till dinner time, they are permitted to amuse themselves with seeing them fight: the cock-pit was the school, and the master the controller and director of the pastime." This custom, according to a modern author, was retained in many schools in Scotland within the last century, and perhaps may be still in use there; the schoolmasters claimed the runaway cocks as their perquisites, and these were called *fugees,* 'corrupt, I suppose,' says he, 'of *refugees.*'

In the reign of Edward III. cock-fighting became a fashionable amusement; it was then taken up more seriously than it formerly had been, and the practice extended to grown persons; even at that early period it began to be productive of pernicious consequences, and was therefore prohibited by a public proclamation, in which it was ranked with other idle and unlawful pastimes. But notwithstanding it was thus degraded and discountenanced, it still maintained its popularity, and in defiance of all temporary opposition has descended to the modern times. Among the additions made by Henry VIII. to the palace at White-hall, was a *cock-pit,* which indicates his relish for the *pastime* of cock-fighting; and James I. was so partial to this diversion, that he amused himself in seeing it twice a week. Exclusive of the royal cock-pit, we are told there was formerly one in Drury-lane, another in Jewin-street, and a third in Shoe-lane, if the following story be founded on fact. "Sir Thomas Jermin, meaning to make himself merry, and gull all the cockers, sent his man to the pit in Shoe-lane, with £100. and a dunghill cock, neatly cut and trimmed for the battle; the plot being well laid, the fellow got another to throw the cock in, and fight him in Sir Thomas Jermin's name, while he betted his £100. against him; the cock was matched, and bearing Sir Thomas's name, had many bets laid upon his head; but after three or four good brushes, he showed a payre of heeles: every one wondered to see a cock belonging to Sir Thomas *cry craven,* and away came the man, with his money doubled."

I shall not expatiate upon the nature and extent of this fashionable divertisement; but merely mention a part of it, which seems to be an abuse of the modern times; and as a late judicious author justly says, "a disgrace to us as Englishmen!" It is called the *Welsh main,* and consists of a certain number of pairs of cocks, suppose sixteen, which fight with each other until one half of them are killed; the sixteen conquerors are pitted a second time in like manner, and half are slain; the eight survivors a third time, the four a fourth time, and the remaining two a fifth time; so that thirty-one cocks are sure to be inhumanly murdered for the sport and pleasure of the spectators!

In the old illuminated manuscripts we frequently meet with paintings, representing cocks fighting; but I do not remember to have seen in any of them the least indication of artificial spurs; the arming their heels with sharp points of steel is a cruelty, I trust, unknown to our ancestors*.

In addition to what has been said, I shall only observe, that the ancients fought partridges and quails, as well as cocks; "in like manner," says Burton, "as the French do now; how far, if at all, the example has been followed in England, I know not."

(Communicated by I. B—n, London.)

ON POETRY.

Poetry is a mixture of painting, music, and eloquence. As *eloquence,* it speaks, it proves, it relaxes. As *music,* it has a regulated course, tones and cadences, whose combinations form a kind of concert. As *painting,* it draws out objects, and lays on colours; it expresses every beauty in nature: in a word, it makes use both of the colours and the pencil. It employs concords and harmony, it shows truth, and knows how to make truth lovely.

Poetry takes in all kinds of subjects: it employs every shining action in history; it enters into the regions of philosophy: it flies into the skies, to admire the courses of the heavenly bodies: it darts into the sea, and into the internal parts of the earth, there to examine the secrets of nature: it penetrates even into the mansions of the dead, to see the rewards of the good, and the tortures of the bad: it takes in the whole universe. If this world is not sufficient, it creates new ones, which it embellishes with enchanted dwellings, and peoples with a thousand different sorts of inhabitants. There it creates beings after its own fancy: it produces nothing but what is perfect; it improves every production of nature: it is a kind of magic; it flings illusion into the eyes, into the imagination, into the mind itself; and makes us enjoy real pleasures by inventions merely chimerical.

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* In common with every friend of humanity, I rejoice to say, that the *Royal* cock-pit at St. James's, has lately been abolished.
J. B.

ANON.

ON THE PHILOSOPHER'S STONE.

SIR,

AMONG the numberless philosophical disquisitions which have filled the pages of the Enquirer, I am surprised that your ingenious correspondents have forborne to treat upon the nature of the philosopher's stone, a subject of much more importance to the general welfare of society, than at first sight it appears to be; a research well worth the attention of the curious.

It is a subject, undoubtedly, which has been much misunderstood, since it has been a received opinion, that a certain hidden mystery, known only to the ancients, by a chemical application, and laborious process, had produced a phenomenon called the philosopher's stone, or, in other words, the art of turning common substances into pure gold. I need not remark that, at that period, moral truths were usually conveyed under some fiction, and gold was a term synonymous to happy; for instance, "the golden age," which was intended to convey an idea of that state of innocence and perfection, which was enjoyed by the inhabitants of this earth, before ambition, covetousness, and envy had destroyed the felicity of mortals, and filled it with misery and crimes. This justifies me in supposing, that, as philosophy teaches us the art of making every state and condition in life happy, (and as few have ever arrived at that rare perfection of sentiment which can extract good from evil, and by the innate virtues of the soul, supersede the want of external and perishable treasures) it may be fairly imagined that such, in the language of ancient metaphor, may be said to have found the philosopher's stone; a research as difficult and unattainable to the vulgar and sensual mind, as for the alchymist to extract in reality, the pure unalloyed metal from grosser substances.

While I was pursuing this train of thought the following lines obtruded themselves upon my mind, which as, in some measure, they explain more directly my ideas on the subject, I will here subjoin; and if with the foregoing remarks, you think them worth inserting in your next number, I may perhaps, from time to time, trouble you with my speculations, which, if they boast no other merit, will, at least, be original.

CONTENT.

In what lone corner shall we find
The prize that's sought by all mankind,
Which worldlings seek, yet seek in vain,
And yet 'tis easy to obtain?
We run the mazy path of care,
And think how vain! to find it there.
'Twas never in the palace found,
Yet in the cottage doth abound.
The merchant who with anxious mind
Watches the varyings of the wind,
In hopes his vessel's freight contains
This sweet reward for all his pains,
Though safe in port his vessel rides,
And Fortune pours her golden tides,
His avarice still demands increase—
Thus wealth for ever breaks his peace.
The learned alchymist, who pores
In careful search his midnight hours,
Wasting whole years in toil and pain,
In hopes this fancied prize to gain,
He beats, he blows, all efforts tries,
The pure ethereal vapours rise;
At once they seek their native skies,
And leave him hopeless to behold
The dross remain instead of gold.
But ah! unthinking man, believe;
Trust me, I mean not to deceive;
'Tis not in riches, not in power,
'Tis not in Pleasure's rosy bower,

'Tis not in mines, nor in the sea,
'Tis not in chains, or liberty;
But if this jewel you wou'd find,
'Tis center'd in the virtuous mind.

VERITAS.

CHAUCER'S POEMS.

In the edition of Chaucer's works printed by John Reynes, 1542, in black letter, with wood-cuts, Heriwardus de Brunne will find a copy of "The *Plowman's Tale*;" it is, to the best of my recollection, inserted immediately after "*The Parson's Tale.*" I had a copy of this in my possession some little time since. It is extremely rare, and I do not know where one can now be met with.

Manchester, March 6, 1812. W. F.

LITERARY MISCELLANIES.

(Continued from page 71.)

Adieu, French, from "ad Deum te commendo," *i. e.* I commend you to God. Farewell, fare ye well, a similar expression to the Io Pæan of the Egyptians, and the "Deo gratias" of the Romans; being short expressions to excite a reliance on God in distress.

Swearing by bell, book, and candle, originated in the manner of the Pope's blessing the world yearly, from the balcony of St. Peter's at Rome. He holds a wax taper lighted, a cardinal reads a curse on all heretics; no sooner is the last word uttered, than the bell tolls, and the Pope changes his curse into a blessing, throwing down his taper among the people.

Adore, from *adorare* and this from *adas*, a respectful mode of salutation by carrying the hand to the mouth.

Nine of diamonds, called the curse of Scotland, from a Scotch member of Parliament, part of whose arms is the nine of diamonds, voting for the introduction of the malt-tax into Scotland.

Carving at table, by ladies, Verstigan says, originated among our Saxon ancestors; and the title of lady sprung from this office, as *laf-ord* or *loaf-giver* (now lord) was so called from his maintaining a number of dependants: so *leaf-diaw*, or *lof-diaw*, i. e. loaf server, is the origin of lady, she serving it to the guests.

VICAR OF BRAY. We frequently hear this reverend son of the church mentioned; probably his name may have outlived the recollection of his pious manœuvres. The vicar of Bray in Berks, was a papist under the reign of Henry VIII. and a Protestant under Edward VI. He was a Papist again under Queen Mary, and again became a Protestant in the reign of Elizabeth. When this scandal to the gown was reproached for his versatility of religious creeds, he answered, "I cannot help that; but if I changed my religion, I am sure I kept true to my principle, which is, to live and die *Vicar of Bray.*"

ENGRAVING ON WOOD. The earliest impression of a wood-cut, of which we have any certain account, is that of St. Christopher carrying an infant Jesus through the sea; in which a hermit is seen holding up a lantern to show him the way; and a peasant with a sack on his back, climbing a hill, is exhibited in the back-ground. The date of this impression is 1423.

It is remarkable that England, at the era of the restoration of learning, supplied fewer than almost any other country, of those manuscripts from which the works of the ancient Greeks and Romans were first printed. The following extract from the preface of Bale, Bishop of Ossory, to his translation of John Leland's "New-year's Gift to King Henry VIII." accounts in part for a fact so discreditable to the literary fame of England.

"A greate nombre of them whyche purchased, those superstycyouse mansyons (monasteries) reserved of those lybrarye bookes, some to serve theyr jakes, some to scoure theyr candlestyckes, and some to rubbe theyr bootes. Some they solde to y^e grossers and sope-sellers, and some they sent over see to y^e bookebynders, not in small nombre, but at tymes whole shyppes full, to yᵉ wonderynge of foren nacyons. Yea yᵉ Universytees of thys realme are not alle clere in this detestable fact. But cursed is that bellye whyche seketh to be fedde with suche ungodlye gaynes, and so depelye shameth hys natural contreye. I knowe a merchant manne, whyche shall at thys tyme be namelesse, that boughte yᵉ contentes of two noble lybraryes for fortye shyllynges pryce: a shame it is to be spoken. Thys stuffe hathe he occupyed in yᵉ stede of greye paper, by yᵉ space of more than these ten yeares, and yet he hathe store ynoughe for as manye yeares to come. A predygyuouse example is thys and to be abhorred of all men, whyche love theyr nacyon as they shoulde do. The monkes kepte them undre dust, yᵉ ydle-headed prestes regarded them not, theyr latter owners have moste shamefullye abused them, and yᵉ covetouse merchantes have solde them awaye into foren nacyons for moneye."

Bocking Academy, March 16, 1812. D. COPSEY.

ANSWER TO THE ANTIQUARIAN QUERIES

PROPOSED IN NO. V.

J. H. N. near Leeds, observes, "By the term *Lorciner* (or as it is sometimes, and more properly, written *Lorimer*) was meant a manufacturer of the iron caparison which forms a part of bridles, such as curbs, bits, &c. The word is derived from the Latin, *Lorimer*, a bridle.

The word *Skellata* is sometimes found in old records, and is generally supposed to mean the small bell, which is usually rung a few minutes previous to the commencement of the service in our English churches; and which is commonly, though very indefinitely, called the "tinkling bell."

Spaldinensis says, Lorriners or Lorrimers (Fr. *Lormier*, from the Latin, *Lorum*) is one of the Companies of London that makes bits for bridles, spurs, and such-like small iron ware. Anno 1 Rich. 2. cap. 12."

(See Blount's Dictionary of difficult and obscure law terms.)

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J. B. refers to Bailey's Dictionary, article *Skeletta,* where the subject of enquiry is defined to be "small bells formerly used in churches or steeples."

Mr. D. Copsey observes that the word *Skillet* signifies a kettle or caldron, and says that it is generally so explained in our Dictionaries.

Mr. C. gives the same definition of Loreiner as *J. H. N.* and *Spaldinensis*; and fixes the date of the incorporation of the Lorimer's Company at 1488.

By *masse pennie* (he says) was meant the alms which it was formerly, and is now, the custom for Catholics to give to the poor-box, at masses for the repose of souls departed.

Mr. Copsey supposes that the entries respecting Louth Church relate to some painting or carved work.

SOLUTIONS AND REPLIES

TO QUERIES PROPOSED IN THE PRECEDING NUMBER.

QUERY 32.

Answered by Mr. John Nowell, Farnley Wood, near Huddersfield.

THE electric fluid, like caloric, possesses that most curious property of penetrating the most compact bodies, and of passing through them with greater facility than through those bodies which, on account of their porosity, one would imagine would admit them the easier. From the similarity of the two fluids, in this respect, and from their uniform similarity in many others, one would be almost led to suppose that their radical properties are of the same nature. But, however, if we suppose their radical to be similar, various contrary facts point out to us only to consider them as modifications of each other. That property of the electric fluid of being conducted by the most dense bodies, agrees equally with the properties of caloric in this respect, and it is very probable, reasoning from analogy, that each are conducted through such bodies, on one and the same principle.

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Taking this then for granted, the same theory which is given to account for the difference that bodies possess for conducting caloric, will, it is evident, equally apply to the facts in question.

Bodies, whether in a solid, liquid, or aeriform state, are composed of innumerable particles, or atoms; not indeed cohering together, but kept asunder by an unknown cause called repulsion. Now the greater the action of this repulsive power, the greater distance the particles must be one from another; and this law evidently constitutes the difference between dense and light bodies.

If the particles of bodies then be not in a state of actual cohesion, as might easily be proved, between these particles there must exist a space, either void or filled up with some thin fluid, such as atmospheric air. Consequently, if either caloric or the electric fluid was given by any means to a light body, it would be imperfectly conducted by that body, because the void places left by the atoms not cohering close, on account of their thinness, would act as unperfect, if not as non-conductors, and by this means considerably impede their passage.

Now with iron it would be the reverse, for as the repulsive power of its particles are weak, and of course not containing so many void unconducting mediums, little resistance would be afforded to the particles of either caloric or the electric fluid in their passage through it. From the facts detailed we readily perceive that the conducting powers of bodies increase exactly in the same ratio as the repulsive power of their particles decrease; so that if, by any means, we could solidify bodies by diminishing the repulsive power of their particles, their capacity for conducting the electric fluid would be increased.

Communications relating to this query were also received from *J. H. N.* near Leeds, and *Miss Willerton, Spalding Seminary.*

Query 33.

Mr. J. Baines, jun. of Horbury Bridge, near Wakefield, says, "A philosopher is greatly superior to a clown, even if he be compelled by the iron hand of adverse fortune to earn a livelihood by labour in conjunction with the most uncultivated class of men. He has an inexhaustible stock of consolation within his own breast unknown to the vulgar peasant; and the rays of enlivening hope shine more refulgent on him than on the generality of mankind. He is like a rare and curious flower growing amidst weeds, thistles, and brambles, and attracting the admiration of every rational beholder; or like a fruit-tree in a forest, *bearing fruit*, and also as useful as the *fruitless* timber-tree. But above all, he greatly excels the clown by transmitting his name to posterity, by leaving the traces of genius behind him, and by ornamenting the pages of literature with his labours, which, when ages have rolled away, will keep his remembrance alive in the grateful memory of mankind.

QUERY 34.

Answered by J. H. N. near Leeds.

The hair originates in the cutis and in the fat underneath it, and is thought by anatomists to have communication with the nerves; and as the nerves are the primitive organs of all muscular motion and animal sensation, and these two functions depending on the brain, though in a manner inexplicable to us; it is probable that sudden fear or terror by throwing the blood into quicker circulation, dilating the eyes, causing the heart to palpitate, and contracting all the muscles and nerves, will affect the roots of the hair, and cause it to rise from its usual level. We find this effect of fear mentioned in Scripture, see Job, chap. iv. ver. 15. The poets also notice it. When Æneas was searching for Creusa, "when Troy's proud city was on fire," her ghost appeared to him: in describing his terror he says,—

> "Aghast, astonished, and struck dumb with fear
> I stood: like bristles rose my stiff'ned hair."
>
> DRYDEN'S VIRGIL, ÆN. ii.

So Ovid,—

> ——— gelidæque comæ terrore rigebant.
>
> METAM. LIB. iii. l. 100.

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When Priam was terrified at the appearance of Mercury, it is said, "the hair on his bended limbs stood erect;"—

> Ορθαι δε τριχες εςαν ενι γναμπτοισι μελεσσι.
>
> IL. LIB. XXIV. l. 359.

The lost soul in Shakspeare says,—

> "I could a tale unfold, whose lightest word
> Would harrow up thy soul, freeze thy young blood,
> Make thy two eyes, like stars, start from their spheres,
> Thy knotted and combined locks to part,
> And each particular hair to stand on end,
> Like quills upon the fretful porcupine."
>
> HAMLET.

Mr. J. Baines says, "It is well known that all parts of the human body have some kind of circulation carried on in them, and when this circulation is stopped the parts become stiff, and consequently erect. Now if fear causes a stoppage of this circulation in the hair, it will of course cause it to stand erect. But whether it does or no, I am not prepared to decide."

Observations on this query were also received from *Mr. J. Bamford, of Holthead, near Huddersfield,* and *Mr. W. Dunn, of Broughton.*

QUERY 35.

Answered by J. H. N. near Leeds.

The sweet fluid called honey-dew does not fall from the air, as some persons have conjectured, and as its name implies; but is excerned by insects of the aphis genus, which adhere to the under sides of the leaves, and emit this liquor upon the surface of other leaves below them. The insect exists by sucking the juices from the numerous vessels which are in the leaves; and it is remarkable that it rejects the saccharine part, or "honey dew," which drops from its body, in small, and sometimes perceptible globules, and so affords nourishment to myriads of ants, and other minute insects. What a striking instance of the wisdom, power, and goodness of God in the creation!

Mr. J. Nowell says, "It appears to me very natural to suppose, that the substance called honey-dew was originally a part of the sap of the plant; from analogy we can hardly doubt that nature has provided proper vessels in plants, as well as in animals, for carrying off superabundant quantities of the circulating fluids as occasion requires. Reasoning in this manner, we see how it is that at particular seasons of the year this substance appears: for a super-quantity of sap may exist which being given out by the vessels appropriated for that purpose, on to the surface of the leaves, where, absorbing one of the principles of the atmosphere, probably the oxygen, it becomes a new substance, namely, sugar, and perhaps mucilage. So exceedingly prone are vegetable substances to decomposition.

Some people are ready to suppose that it is the product of a particular insect, the vine fretter; others that it falls from the heavens. But many anomalies might be brought forward which would utterly confound such vague opinions.

Mr. M. Harrison, of Crosland, near Huddersfield, says, "I have never observed what is called honey-dew on the dead, but only on the living leaves of trees; whereas if it fell from the sky, as some suppose, it would fall on all substances in its way, which never happens, but on the full-grown leaves of living trees and grasses.

"A vegetable is a collection of tubes or vessels, endowed with life, able to imbibe particular fluids, and to alter their nature; like unto animals who secrete milk and fat from their food, so vegetables secrete gum, sugar, and various resinous substances from their food, which is water and air holding heterogeneous matter in solution; which being absorbed by their roots become sap, and is carried up into the leaves by vessels called by Mr. Knight central vessels, where it undergoes a chemical change, and becomes a new substance in its return down the bark. In the summer months when the trees are full of foliage, the sap circulates much quicker than at other seasons of the year; when trees are overcharged with sap, they have appropriate vessels to throw off the excess, and what exudes and remains upon the leaves of several trees and grasses, becomes sweet and glutinous: when, by the action of the sun and air, the watery particles are evaporated, it forms what is called honey-dew."

Of this opinion is *Mr. Joshua Bamford.*

Answered by Miss E. Green, (aged 12) Spalding Seminary.

It is now allowed to be ascertained, after various experiments, that the glutinous substance termed honey-dew, which is found on the leaves of trees, falls from the air like dew. In some countries it is found on different sorts of vegetables, and during one night the leaves of a whole row of trees will be completely covered with it, although there was none on before. Probably this dew is formed from vapours rising from the blossom of trees, &c. and if it fall in one place more plentifully than in another it is owing to the direction of the wind. It is observed that the leaves on which this dew falls blacken and decay, and very possibly this substance may be the cause of it.

Mr. John Baines says, "The Abbé Boissier de Sauvages, in a memoir read before the Society of Sciences at Montpellier, has given a very clear and circumstantial account of the origin of the honey-dew. He has seen it in its primitive state on the leaves of an holm oak, before the drops had run together; in such a form as to leave no doubt but that it had issued from the leaves. Heat he supposes to have been the cause of its emission; for, though common heat only promotes the transpiration of the more volatile and fluid juices, yet a sultry heat, especially if reflected by clouds, may so far dilate the vessels as to produce a more viscous juice, such as the honey-dew. But there is another kind of honey-dew found on the leaves of plants and trees, which is ejected from the vine-fretter, (a species of aphis) and forms a part of the most delicious honey known in nature."

QUERY 36.

Mr. D. Copsey says, Mr. Brand in his appendix to "Bourne's Antiq. Vulg." observes, "that the origin of this sport is said to be derived from the Athenians on the following occasion:—When Themistocles was marching his army against the Persians, he by the way espying two cocks fighting, caused his army to behold them, and made the following speech to them: 'Behold! these do not fight for their household gods, for the monuments of their ancestors, nor for glory, nor for liberty, nor for the safety of their children, but only because one will not give way to the other.' This so encouraged the Grecians, that they fought strenuously, and obtained the victory over the Persians; upon which cock-fighting was, by a particular law, ordained to be annually practised by the Athenians*.

"It appears that the Romans, who borrowed this with many other things from Greece, used quails as well as cocks for fighting. The first cause of contention between the two brothers, Bassianus and Geta, sons of the Emperor Septimius Severus, happened, according to Herodian †, in their youth about fighting their quails and cocks. It is probable that cock-fighting was first introduced into this island by the Romans. The bird itself was here before Cæsar's arrival. William Fitz-Stephen, who wrote the life of Becket in the reign of Henry II. is the first of our writers that mentions cock-fighting, describing it as the sport of school-boys on Shrove-Tuesday. 'The Theatre (Cockpit) it seems was the school, and the master was the comptroller and director of the sport.' In a word, cock-fighting is a heathenish mode of diversion from the first, and at this day ought certainly to be confined to barbarous nations. Yet it may be added to aggravate the matter, and increase our shame, that our *butchers* have contrived a method unknown to the ancients, of arming the heels of the bird with steel, a devise considered as a most noble improvement in the art, and indeed an invention highly worthy of men that delight in blood."

Similar answers were given by *Mr. J. Bamford, Mr. W. Dunn, J. H. N. Mr. M. Harrison, Philario, and Mr.*

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* Thus far Mr. Bailey; however, I do not find his authority for this among the ancients. It is not taken notice of by Plutarch; neither does Corn. Nepos mention any such incident in his Memoirs of Themistocles.

† Herodian 3. Sect. 33.

M. Phoston. See also the extract from "*Strutt's Sports*" inserted in this number.

QUERY 37.

Answered by H. B. of Boston.

The following observations are submitted in answer to the sixth Query in the fifth number of the Enquirer; under a hope that they may in some measure remove an idea which appears to be fixed on the mind of the querist, that there is an apparent inconsistency in the evangelical writers as to the case of the woman whose daughter was grievously vexed with a devil, or an unclean spirit.

He states as follows: "The woman was a native of Canaan, Matt. xv. 22. In St. Mark's Gospel it is said she was a Syrophenician, Mark vii. 20;" and asks, "how is this seeming contradiction to be reconciled ?" !!

I first desire to observe, that the country possessed by the Canaanites, previous to the invasion of it by the Children of Israel under Joshua, comprehended the whole coast forming the east border of the Mediterranean Sea, extending from 31 and a half to 37 degrees of north latitude, a distance little less than five hundred miles.

Secondly; that as the southern districts of Canaan were esteemed the richest parts of the country, the invaders satisfied themselves therein, confining their conquests, and subsequent divisions of the land, between Beersheba on the south, and Dan on the north, a distance of about two hundred and fifty miles; leaving the north moiety of Canaan unmolested.

Thirdly; that this northern district of Canaan was called Phenicia; that it was a part of Syria; that it contained the coasts of Tyre and Sidon, which adjoined that part of the coast of Canaan which had been conquered by Joshua.

Fourthly; we read that Jesus "departed into the coasts of Tyre and Sidon, and behold a woman came out of the same coasts, and cried, &c. (Matt. xv. 22, 23.) St. Mark writes, "the woman was a Greek, a Syrophenician by nation !" (chap vii. ver. 26.)

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I conclude therefore, that, coming from the coasts of Tyre and Sidon, she was a Canaanitish woman of Phenicia in Syria, by nation; and a Greek, that is a *Gentile*; and this conclusion seems to be corroborated by the text following the verses before quoted, "it is not meet to take the childrens' bread and cast it to dogs."

Spaldinensis observes, "I think the words of Dr. Carpenter, in his "Geography of the New Testament," will satisfactorily answer this question. "Tyre and Sidon are several times mentioned in our Lord's discourses; and in the adjoining district, the *coast of Tyre and Sidon*. He miraculously cured the daughter of a woman of SYROPHŒNICIA, that is that part of Phœnice which bordered on Syria. As the remnant of the ancient Canaanites dwelt in Phœnice, this woman is called by Matthew, a woman of Canaan."

Thus the seeming difference between the two Evangelists is reconciled, but why Mark himself should call this woman both a Greek and Syrophœnician, in the verse alluded to, may appear still more mysterious, if we consider the distance between Greece and Syria; but this difficulty also may be obviated by a little candour and reflection. It is well known that at the time of Christ's appearance upon the earth, all the world, except the Jews, were sunk in the grossest idolatry, especially the *Greeks*, who were so infatuated with their false gods, as to make the name *Greek* become proverbial for *Idolater* *. And in this substituted sense it was, that Mark used the word, without considering to what country the woman belonged; as we sometimes say, such a man is an *arrant Frenchman*, when we only mean to imply, that he is greatly disaffected to the interests and government of this country.

Mr. D. Copsey, after some very ingenious remarks corresponding very nearly with the above, adds: "It has been observed by Bochart that the Canaanites were ashamed of their name on account of the curse denounced on their progenitor, and terrified by the wars continually waged on them by the Israelites; and that to avoid the ignominy of the one, and the danger of the

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* In this sense the word *Greek* must be understood in Rom. i. 16, Gal. iii. 28.

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other, they abjured their old name, and changed it for Phœnicians, Syrians, Syrophœnicians, and Assyrians. The borders both on the Phœnician and Syrian sides, were called by the common name of Syrophœnicians, as partaking equally of both nations.

Of a similar opinion was *J. H. N.* the proposer.

QUERY 38.

Mr. A. Hirst (the proposer) says, "If the edge of a piece of pure silk be exposed to the flame of a candle it burns to a black coal after the manner of wool or hair; but if there be any cotton or linen mixed with it, they may be discovered, for they will not burn to a coal, but are turned to ashes in a moment, accompanied with a different kind of smoke, and by this means may be examined both the warp and the woof of any piece of silk by taking a thread of each."

Mr. M. Harrison observes that "cotton is extremely combustible, and burns with a clear lively flame. Silk on the contrary is but imperfectly combustible, though fire rapidly blackens and decomposes it; these distinguishing characteristics are sufficient for the purpose required by the query."

QUERY 39.

Answered by Mr. J. Baines, jun. the proposer.

We are informed, that before the deluge the life of man was generally about eight or nine hundred years; after that event it fell almost all at once to about one hundred and fifty, or one hundred and eighty. The diminution ever since, though small, has been gradual and perceptible; so that it is now no more than seventy or seventy-five. The great difference of the length of human life between the ante-diluvian and post-diluvian worlds was probably occasioned by some great alteration of the surrounding atmosphere; vegetable productions were rendered less nutritive, and animal food was granted (Genesis ix. 3): from which, I think, it is reasonable to infer, that as human life has ever since decreased, the atmosphere has been gradually growing less pure and salubrious, and less fit for the support of animal life.

Mr. Copsey says, the period of man's life being protracted to such an extraordinary length before the flood, appears to have been designed for the more rapid peopling of the earth. Yet immediately after the deluge we find the life of man gradually decreasing to fourscore years. Various reasons have been assigned for this decrease; the most probable appears to be the change which must have taken place in the atmosphere in consequence of the deluge, which rendered it unfavourable to the constitution of man.

In many parts of the Old Testament we find men of a hundred and even of eighty years spoken of as very aged, (2 Sam. xix. 32.) which seems to prove that the duration of man's life has not varied for more than three thousand years. What is said in Genesis vi. 3. "My spirit shall not always strive with man, for that he also is flesh; yet his days shall be an hundred and twenty years," appears to allude not to the length of his life, but to the term mercifully afforded the antediluvians for repentance, while the ark was building, (one hundred and twenty years) and it is so explained in 1 Pet. iii. 20. The stature of man does not appear to have suffered any change, for we find that giants were esteemed rarities and wonders of old times; but this is not the case with our bodily strength, which has certainly very much declined, and that greatly in the course of the last six or seven centuries. None of the present degenerate race could exist under the ponderous load of armour in which our forefathers were clad. This may be attributed in great measure to the introduction of luxurious living, which by creating numerous artificial wants has proportionably enervated our bodies. The invention also of an infinite number of mechanical engines, by which manual labour is greatly lessened, and in many cases entirely superseded, must be supposed to have promoted in a great degree this declension of muscular power.

This Query was answered nearly similar as above by *Mr. Joshua Bamford.*

QUERY 40.

Answered by Spaldinensis.

Urim signifies *light,* and *Thummim perfection;* and hence it is that the *Septuagint* translate *Urim and Thummim* by the words Δήλωσιν καὶ Αληθειαν, i. e. *manifestation and truth.*

What the Urim and Thummim were has occasioned a thousand ridiculous conjectures. Dr. Spencer and some others say they were two images, shut up in the doubling of the breast-plate which gave oracular answers: others, that it was the *Tetragrammaton* or the ineffable name of God, written or engraved in a mysterious manner, and done up in two parts, in two different ways. But these are Rabinical fables. And they are equally puzzled to tell how the answers were given by them. The most commonly received opinion among the Jews is, that it was by the shining * and protuberating of certain letters in the names of the twelve tribes, graven on the twelve stones in the breast-plate of the high priest, which constituted the answer. Such Talmudical tales are stated, and ably refuted by the learned Prideaux, in his "Connection of the Old and New Testament," (vol. i. p. 213 to 223) from whence I have drawn and condensed this answer.

All that can be determined with certainty respecting these so long agitated questions is, what the Scriptures inform us, *viz.* That the *Urim and Thummim* were *something* which Moses put into the breast-plate of the high priest; and its use was to ask counsel of God in difficult and momentous cases, in which the interest of all the tribes of Israel were involved; and not for any individual in a private capacity. And it is most reasonable to suppose the responses were given in an audible voice to the high priest, when, according to the prescriptions of the divine law, he asked counsel by presenting himself, with the breast-plate on, over all his robes, before the veil, exactly over against the mercy-seat, where the Divine Presence rested. For in many instances which we have in Scripture of God's being consulted this way, the answer in every one of them, except two, is ushered in with, "*the Lord said:*" and when the Israelites made peace with the Gibeonites, they are blamed because they asked not counsel *at the mouth of God*; both which phrases imply a vocal answer. And as the Lord permitted counsel to be asked of Him in the camp, without the Ark, as well as in the Tabernacle, where the Ark was, it seems probable that *the priest anointed for the wars*, had a tent in the camp on purpose, in which a part was separated by a veil, in the same manner as the Holy of Holies was in the Tabernacle.—See Godwyn's "Moses and Aaron," p. 183.

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* Cruden's Concordance, under the word Thummim.

Mr. D. Copsey, after solving this query nearly as above, adds, "One of the learned Jews * says, that the manner of asking counsel by the Urim and Thummim was thus; when they enquired, the priest having the ephod on him, stood with his face towards the ark, and the enquirer stood behind him, with his face towards the back of the priest, and asked with a low voice, as one that prayeth by himself; forthwith the Holy Ghost came on the priest, and he beheld the breast-plate, by the vision of prophecy, and gave the answer."

Mr. M. Phoston says, "I am disposed to consider the names of the twelve tribes of Israel engraven on the twelve precious stones, as what alone was meant by the *lustre and perfection*, the *Urim and the Thummim*, which was appointed to be put in the breast-plate of judgment; *Urim* denoting the glory of the visible church, as bearing the *light of* truth (signified by the lustre of the precious stones); and *Thummim*, the unity of all its parts, constituting its *perfection*, signified by *all* the tribes of Israel engraven on these stones, and as it were enshrined in their glory. See a very ingenious paper on this subject, in the 'Christian Observer,' for March, 1812, from whence I have extracted the above."

Communications on this query, similar to the above in substance, were received from *Mr. J. Baines jun.* *J. H. N.* and *Mr. F. C. Spencer*, Halifax.

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* Maimon apud Ainsworth on Exodus xxviii. 30.

QUERY 41.

Mr. J. Baines, jun. says, "Man is endowed with both instinct and reason. The instinctive faculty is that inclination implanted in him, which is continually drawing him into some action or passion; and the reasoning faculty judges of the propriety or impropriety of such action or passion. But brutes have no judging faculty, they never curb their inclinations, nor check their pursuits; which all men possessed of a reasoning faculty do; whence I infer that instinct is a quite different principle from reason.

Mr. D. Copsey observes that reason is a progressive faculty, and implies thought and design. Instinct is a faculty not improved by observation, but imparted in its perfection to animals at their birth; and may be defined to be a natural tendency or direction without choice, motive, or end. Although some animals in many of their actions discover a wonderful degree of instinct almost approaching to reason, yet we cannot conclude from this that the principle of action in them is the same as in man, and differing only in degree; for every thing possessed of reason must be capable of observation: and if this were the case with respect to the animal creation, we should not see as we do now, all of them construct their various habitations in a manner peculiar to their species; we should not find the nests of one kind of birds corresponding exactly in form and materials with those of the same species, but every one would contrive in a different manner according to the individual ideas formed of convenience, duration, &c. and would improve upon the methods observed by those who went before. Mr. Locke indeed observes, "that animals seem to have perceptions of particular truths, *and within very narrow limits the faculty of reason;*" but allows that "we have no reason to suppose that their natural operations are performed with a view to consequences, and therefore not the result of a train of reasoning in the mind of the animal." This latter concession goes to admit that animals have not the faculty of reason in *any* degree. For what operations are they capable of which are *not* natural, and consequently proceed from that irresistible impulse in them which we term instinct? Perhaps it may be said that some animals may be made to acquire the power of performing many actions which cannot be affirmed to be natural to them. But this power is not the result of spontaneous observation, and therefore does not prove the existence of any "train of reasoning in the mind of the animal." It appears also, that all rational creatures must of necessity be morally accountable; and no one, I think, will assert that the brute creation are in any degree accountable for their conduct. Indeed, to affirm that brutes partake of reason, is the same as to assert that they are possessed of an immortal part: for reason is that portion of the breath of life, or of the Spirit of God, which was breathed into man at his creation; I conclude therefore that instinct is a principle totally different from reason in its nature, as it is in its effects.

Answered by J. H. N. near Leeds.

The generality of the heathen philosophers maintained that brutes are endowed with reason. Porphyry, Plato, Celsus, Anaxagoras, and others, were all of this opinion. The stoics held that the divine Being was diffused, in some measure, through all animated nature, consequently they must have believed that brutes had reason. Professor Bergmann supposed that beasts have the powers of perceiving, judging, comparing, &c. Mr. Locke maintains that the souls of brutes are wholly material, that they do not possess the power of abstraction: and that having general ideas is that which puts a perfect distinction between men and brutes. See his Essays, vol. i. Dr. Priestly says that brutes have the same inlets to ideas that we have, and that they have what we call abstraction, and that it is owing to their not having a sufficient quantity of brain that the combination and association of their ideas cannot be so complete as ours. See his Disquisitions, &c. p. 230 to 238. Dr. Hartley says that brutes have more reason than they can show from their want of words. See his Observations on Man.

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I am of opinion that instinct and reason are perfectly distinct principles. The faculty of reason is improved by age and experience. Instinct is fixed, and does not improve. Young children will eat poisonous fruits as readily as those which are perfectly wholesome. Young birds will not do this, they reject those things which are hurtful, as well as the parent bird. A bird builds her first nest as well as any future one. "Reason," says Mr. Addison, "shows itself in all occurrences of life, whereas the brute makes no discovery of such a talent, but in what immediately regards his own preservation, or the continuance of his species." Spectator, No. 120.

Answered by Mr. J. Platts, Boston.

The subject of instinct is involved in much obscurity: some philosophers deny its existence either in man or brute: but, I think, every one who believes in its existence, maintains that it is totally distinct and different from reason. Instinct is defined to be a certain power, or disposition of mind, by which, independent of all instruction or experience, without deliberation, motive, or having any end in view, animals are unerringly directed to do whatever is necessary for the preservation of the individual, or the continuation of the kind; as infants move their lips and turn their heads from side to side in quest of the breast, as soon as they are born, and suck immediately they come in contact with it; as insects deposit their eggs in proper situations, and at the same time food for their offspring; as bees geometrically construct their cells; as birds build their respective nests with uniformity in substance and form, &c.

Instinct, as far as it goes, excels reason; but it is limitted to few objects, and does not profit by wisdom and experience. Actions performed with a view to accomplish a certain end are called *rational*, and the end in view is the *motive* to their performance; but *instinctive* actions cannot be said to have a motive, because they are not done with any *view to consequences*.

It appears to me that reason and instinct are differ-

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ent principles: that man, and all other animals, are possessed of both principles; but where instinct ends, and reason begins, it is difficult to ascertain.

> "Reason's progressive, instinct is complete;
> Swift instinct leaps, slow reason feebly climbs.
> 'Twixt that and reason what a nice barrier!
> For ever separate, yet for ever near!"

Mr. M. Harrison observes, "Brutes, as well as the human species, come into the world without ideas. But as many of their actions are evidently the result of inference, such inferences, or deductions, must be derived from the same principle as that which is called *reason* in man. The only difference is, very probably, in degree.

See also the "Observations on Instinct and Reason," by *Veritas*, inserted in this number.

QUERY 42.

Mr. J. Baines, jun. says, "Commerce is a very considerable advantage to this country: it is so substantially beneficial and essential, that it may be termed the life and soul of the nation. Without commerce, agriculture could never have arrived at its present elevated pitch; nor could the population and revenues of the kingdom ever have attained their existing magnitudes. At the same time it must be acknowledged that agriculture is also a very great advantage to this and every other nation; but in the present situation of England, commerce is the greater of the two. Give us commerce and we can live, but without it we sink, we perish! we shall be as miserable as the ill-fated inhabitants of comfortless Siberia! or the dayless sons of frozen Lapland!"

For a different view of this subject, *vide* "Agriculture and Commerce, considered," &c. as inserted in this number.

QUERIES PROPOSED FOR DISCUSSION

IN THE SEVENTH AND SUCCEEDING NUMBERS.

1 QU. (43) *By Miss Mary Groves, Spalding Seminary.*

What is the general opinion of philosophers concerning the stony substances which have fallen on the earth at different times, and in various places?

2 Qu. (44) *By Mr. M. Phoston.*

Upon what authority is the practice founded, of representing the grave-digger in Hamlet, as wearing ten or twelve (sometimes more) waistcoats, which he divests himself of, previous to his digging Ophelia's grave?

3 Qu. (45) *By the same.*

Does dew arise or descend?

4. Qu. (46) *By J. H. N. near Leeds.*

Was the perplexing labyrinth of poetic fiction, among the Grecians, in the earliest ages, meant to be subservient to the cause of morality and virtue; or was it intended merely to amuse and gratify the people?

5 Qu. (47) *By the same.*

Was the creed used in the Church of England, and called "Saint Athanasius' Creed," made by that Saint, and how are the damnatory clauses in it generally understood by the clergy?

6 Qu. (48) *By Philario.*

At what time, and from what motives, were *mottoes* first used?

7 Qu. (49) *By Spaldinensis.*

If water, or any other fluid, be greatly agitated, air bubbles will arise on the surface: these bubbles invariably assume the form of the upper segment of a sphere: how is this to be accounted for?

8 Qu. (50) *By Mr. M. Harrison, Crosland, near Huddersfield.*

One pound of brass in a lump will fuse in less time than the same weight will do in filings; required the reason?

9 Qu. (51) *By the same.*

Required a cheap method of clarifying fish-oil, and divesting it of its fetid smell?

10 Qu. (52) *By Mr. John Rowell, Farnley Wood, near Huddersfield.*

The prussic acid is capable of combining with potash, and forming a salt exceeding prone to decomposition. But this proneness to decomposition is done away with by adding a quantity of iron dissolved in an acid. In this case how does the iron operate?

11 Qu. (45) *By Mr. W. Allen, Burstwick.*

It is well known that the rainbow is produced by the reflection of the sun's rays upon the drops of falling rain; may we not, therefore, suppose that its appearance was equally as common before the flood as now? if so, in what sense are we to understand it as a pledge that the world shall be no more destroyed by water?

12 Qu. (46) *By Mr. J. V. Oldrid, Boston.*

Carpenters sometimes slit the large beams for warehouses, &c. down the middle, and after turning one half so that its ends shall be reversed, bolt both together again with screw-bolts: they then say the beam is stronger than before. They also say, that if the beam be cut down the middle, and bolted together again exactly as it was before, that it will be stronger for the operation. Is this a fact? if it be, how is it to be accounted for?

ORIGINAL POETRY.

AMY AND HER MOTHER.

BY H. SUMMERSETT.

"Why, neighbour! whither in such speed?
You've something strange to tell:"—
"Bad tidings I have heard, indeed;
You know the river's swell

The foot-bridge hid from all our eyes,
And last night, ere the moon did rise,
Poor Martin Cooper there was drown'd;
As yet his body is not found!"

The cottage-women who thus came,
Where thick the willows grew,
Dar'd not the Lord's high will to blame,
But down the dale they flew:
The dewy cowslip's little flowers,
Scarce older than the morning's hours,
Lost all their sweets, their yellow pride,
And 'neath their swift oppressors died.

The blackbird in the leafy thorn,
Proud of his mellow strain,
Seem'd to enjoy the sunny morn,
Then paus'd and sang again;
But spread his wings, and hush'd his note,
While fear compress'd his little throat,
As quick the peasants took their way,
And brush'd the cluster'd sweets of May.

O, London ladies! I have seen
Your eyes compassion show,
While they por'd o'er some tragic scene,
Or army's overthrow:
And ye have swept the drops away;
But if, that instant, brisk with play,
Your kittens gamboll'd on the floor,
Ye aped their tricks, and wept no more.

But these rude creatures of the wild,
By fashion unrefin'd,
Shed tears as fast as any child;—
What foolishness of mind!
To mourn for one so very poor,
To sigh that Martin was no more:
By whom was Martin known, I pray?
He toil'd for eighteen-pence a day.

Soon came they to the cottage door
Of him who late was drown'd,
And cold with grief, upon the floor,
The dead man's widow found:

"Take comfort, neighbour;" oft they said;
They softly rais'd her throbbing head,
And clasp'd a heart they fear'd would break;
And heard—"I can no comfort take!"

The pomp and loftiness of speech,
So often misapply'd,
These cottage-women ne'er could reach;
They wept and deeply sigh'd:
And when poor Hannah, in despair,
Swept from her face her loosen'd hair,
And glar'd the eye of misery,
Oh, Hannah, how they look'd at thee!

She told them neither joy nor peace
Her breast would enter more;
They whisper'd "*hope!*"—she murmur'd, "*cease!*"
And closer press'd the floor:
She spoke of Martin's heart and mind;
Where should she such another find!
And what remain'd to sweeten life,
Or soothe the woes of Martin's wife!

A pattering in the garden then
Was heard, she rais'd her head,
And saw a troop of village men,
Mute bearers of the dead.
Swoln with the draft by fate impos'd,
With purple lips, and eyes half clos'd,
He seem'd to fix a senseless stare
On Hannah, once his tenderest care!

But little of the scenic art
To this poor wretch was known;
No feign'd distress she could impart,
Her feelings were her own.
With shiv'ring hand she touch'd his cheek,
And, lost to reason, bade him speak:
And while she held the dead man's head,
"Oh, Lord of Heaven!" was all she said.

She saw him in his coffin laid,
And to the church-yard went;
There many a matron, youth, and maid,
The sigh of sorrow sent

To God who knew them all sincere;
Poor Hannah totter'd o'er the bier,
Clasping her hands in strong despair,
And scarcely heard the farewell prayer.

The earth on Martin's bones was pil'd,
The green turf closely laid;
As yet the flowers of summer smil'd
In garden, dell, and glade;
And some that were not over gay,
By Hannah soon were borne away,
Affection's tribute to the dead,
And planted near his feet and head.

And many a statue has been rais'd
O'er many a noble's tomb,
And many a selfish bard has prais'd
His worth, and mourn'd his doom:
O, sculptor, poet, lucky heir!
Could nature lay your bosoms bare,
No, not a hundredth part you'd show
Of this poor woman's artless woe.

Her real grief she could not vent
In strains of elegy;
Her sighs were towards the church-yard sent;
She never saw the tree
Beneath whose green and crowded boughs
She once had listen'd to the vows
Of rustic love, but peace would fly,
And sorrow fill her faded eye.

Now, when the sexton threw the earth
O'er Martin's bones, his wife
Knew that, ere long, she must give birth
To one she'd given life:
And soon the helpless stranger came,
A female, Amy was its name;
And Hannah hop'd the child would prove
The worthiest object of her love.

The babe was fair, the babe was strong,
But why not smile and cry?
It heeded not the nurse's song;
And something in its eye

Seem'd to the widow strange. With tears
She listen'd to her neighbours' fears,
And grew, with sorrow, almost wild—
The mother of an idiot child!

The shaft of death half pierc'd her heart,
When first the truth she found;
She almost wish'd the failing dart
Had made a mortal wound:
And sometimes, with a strange despair,
She'd sit, and on the infant stare,
But neither start, nor suffering cry,
Could move to sense the idiot's eye!

"I grieve, poor babe! that thou art thus!"
The wretched woman said;
"But may my dear Creator's curse
Hang on my sinful head,
If e'er my love for thee decay,
If e'er I slight thee night or day,
Or words of hate, or anger, speak
To one so senseless, one so weak!"

The mother ne'er forgot her vow,
The idiot was her joy!
She gave it many a blossom'd bough,
She gave it many a toy;
And hardly toil'd each year away,
Though summer shed its sweltering ray;
Though winter's blasts were loud and wild,
Her care was still the harmless child.

It grew, e'en as existence, dear
To the poor parent's heart;
Oft would she drop a tender tear,
And oft a smile impart,
As idiot Amy toss'd the flowers,
Or on the green turf pass'd her hours,
Talking unwisely to each bird,
Whose sad or merry notes she heard.

Oh, pity! that a girl so fair
Should have no strength of mind!
Look in her face, the rose is there;
Her tresses on the wind

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Are light in sport. Her wandering eye
Has rais'd the tear, and forc'd the sigh,
And redder lips were never seen,
With rows of speckless pearls between.

When Amy reach'd her eighteenth year,
  She, sickly, droop'd her head:
Her mother ask'd, "What ails my dear?
  "Why is her colour fled?"
She only answer'd, "I don't know;
"You love poor Amy; so does Joe!"
And this the simple girl would say
A hundred times in every day.

Now often she refus'd her food,
  And oft complain'd of pain;
Her mother, in a sorrowing mood,
  Her questions urg'd again:
The idiot smil'd, the idiot cry'd,
And press'd her hand upon her side;
While ever the same words would flow,
"You love poor Amy; so does Joe!"

Joe was a neighbouring farmer's son,
  The rustics call'd him wild;
In folly's path he oft would run;
  A disobedient child:
And Martin's wife had been his nurse,
When grown a man, his father's curse
She bade him shun, if e'er by Heaven
He hop'd to have his sins forgiven.

Joe on a summer's blushing eve
  Would sit at Hannah's door,
And sometimes wish'd her to believe
  His vices all were o'er;
But now he seldom thither came,
Though Amy hourly breath'd his name,
And talk'd in such an idle strain,
As almost craz'd her mother's brain.

Suspicion, horror, doubt, and dread,
  By turns possess'd her mind;
The wandering spirits of the dead
  As much repose could find:

She watch'd her girl, with burning tears,
And in her breast her monstrous fears
Conceal'd: but soon, in accents wild,
She shriek'd—"My child! oh, God! my child!"

Quick flew the clouds, the moon was pale,
  Sharp blew the hurrying wind;
When homeward, down his native vale,
  With thoughts to vice inclin'd,
He went. But ere he reach'd the farm,
A hand, convulsive, grasp'd his arm;
He look'd—'twas Hannah, haggard, wild;
Again she shriek'd, "Oh, God! my child!"

Appall'd and trembling, faint at heart,
  With superstition cold;
He now forgot his boasted art,
  Nor try'd to break her hold;
But, at the fearful name of God,
The rebel sank upon the sod,
While conscience stripp'd the adder's nest,
And plung'd the reptiles in his breast.

"Hast thou a heart that e'er could feel?
  Hast thou no dread of Heaven?
Enough! Thy looks thy crimes reveal;
  Thou ne'er canst be forgiven!
A fouler act was never done;
And when thy wicked race is run,
When life but glimmers in thine eye,
How great must be thy fear to die

"She was my sole, my only joy;—
  Oh, my poor idiot child!
How couldst thou, then, my peace destroy,
  And turn my senses wild?
How couldst thou, monster, dare to think
The righteous eye of God would wink
Upon the crime that stains thy name,
And covers thee with endless shame?

"I thought not that a wretch so vile
  E'er liv'd beneath the skies;
No friend shall on thee dare to smile,
  But vengeance soon will rise:

Oh, thou wilt feel a mighty rod,
Despis'd by man, abhorr'd by God;
Condemn'd by all, by none excus'd,
And every prayer by Heaven refus'd!"

"Oh, mercy!" then the sinner cried,
While torture rent his breast;
Poor Hannah fainted by his side,
And found a moment's rest.
He rose, and hurried to depart,
But terror press'd his shrinking heart,
For idiot Amy then was there,
With half-clad limbs, and streaming hair.

He groan'd, he fled in wild affright,
His brain was whirling round;
He saw the river clear and bright,
Where Martin had been drown'd.
And there the lost man seemed to rise,
With anger in his horrid eyes,
While a loud awful curse he heav'd;
Or so the frantic wretch believ'd.

Who is that man with locks so grey,
Bent with a weight of years,
Who treads this path each sabbath-day,
And sheds a flood of tears?
Oh, father of a wayward son,
Thy race of life is nearly done;
Not long the sorrowing stream shall flow
Upon the grave of guilty Joe.

And who is she, whose silent grief
Must ever pity claim?
Alas! her cares are past relief,
And Hannah is her name.
Not only on a Sabbath-day
She towards the church-yard bends her way,
But duly every morn and eve
O'er yonder turf she's seen to grieve.

The bones of Amy there repose,
There Amy's infant lies;
Ah, woman, could I cure the woes
That fret thine aged eyes!

But nought thy mangled heart can heal;
Ye proud ones; for the humble feel;
Sure it would make a savage mild,
To hear her say,—"my idiot child!"

FRAGMENT.

BY MARIANNE MEGGET *.

Genius of verse! my prayer approve,
O lead me to the scenes I love;
Where many a stream meandering flows,
And many a weed, and many a rose
Luxuriant blooms. Where gloomy woods,
And verdant lawns, and dashing floods,
And silent glens where echo sleeps,
And cloud-topt mountains' frightful steeps,
Combine to form one beauteous whole,
And fill with ecstasy the soul.
Genius of verse! if thou my prayer approve,
O lead me to these scenes, for 'tis such scenes I love!

Bear me on rapid wings on high,
And let me view the starry sky;
Let me behold the queen of night,
And mark the clouds' majestic flight,
Watch the first dawning of the morn,
And sip the dew that gems the thorn;
Till nature, bursting from the sober grey,
Blazes around, and pours a flood of day.

Then lead me to the shady bower,
Guarded by the sombre power,
Sweet solitude; where oft at night
Angels rob'd in purest white,
As poets tell, will often deign
To wander and converse with men;

---

* This and some other pieces which will appear in the future numbers of the Enquirer, under this signature, were written by a young lady at the early age of seventeen. They are presented to the public in the unfinished state which they were left in by their amiable authoress.

O take me to thy bless'd abode,
And let my soul converse with God.
Benignant power! do thou my prayer approve,
And let me lonely wander through the scenes I love.

IMITATION OF ANCIENT ENGLISH POETRY.

TO MIE VERIE DERE SISTERRE JAYNE, ON HER BIRTHE DAYE HAPPENYNG THE THIRTIE FYRSTE OF JANUARYE.

LOKING abrode upon the darke browne mede
I saw no flouretts sweete to decke thie haire,
And musing sadly to myselfe I saide,
Thys daie wyll passe withouten tribute faire;
Botte no! on lyttel songe mie voyce schall dare,
Poore paie, ah me! for rosie crowne I ween,
And yett bie thatte affectionne wyll be seene,
Bette thann bie kynge-coppes, or a wreathe moe rare;
Albeytte they be woven curiouslie,
The swotest floures wylle fade upon the grene,
Botte love, trew love, canne never never dïe.

Gyff that the warmest wysh that e'er
Soughte heavenlie bower thro' fieldes of aire,
Can bringe thee moe thann Crœsus' wealthe,
I wis the blush of roddy healthe:

Gyff thatt the ferveyn'st halliest sighe
Seyncte breathed aye yn watchet skie;
Canne win fayre Peace wyth gentil swaie,
To crowne for thee eche passante daie:
Gyff the bryghte force of dewie teare
Sik as shulde drop froe eyne of fiere
For selyness of sisterre deare,
Canne blount the thorne of foul annoye,
And gilde Lyfe's littel hour with Joye:
Thatte wysh, thatte sighe, thatte teare ys myne,
And Healthè, Peace, Joye, dere Jayne, be thyne.

J. OWSDULL.

LINES

TO MY WIFE ON THE ANNIVERSARY OF OUR WEDDING DAY.

Eliza, 'tis just eighteen years
Since thou and I first came together;
We've travell'd on life's rugged way,
In sunshine and in stormy weather.

Whatever cares disturbed my breast,
Thine was the wish those cares to smother;
The sweetest, loveliest, best of wives,
The kindest, fondest, tenderest mother.

When free from cares, my heart elate
With joy, and mirth, and glee was thrilling,
'Twas thine to heighten all my bliss,
By every wish to please, fulfilling.

When sick, 'twas then thy constant care
To keep my feeble heart from drooping;
To smile through grief, to hold my head,
And lay my pillow softly sloping.

Then how can I reward thy love,
Except by equal love returning?
I'll grant whate'er thy heart can wish,
And gently wipe thy tears when mourning.

Some who have lost a tender wife,
Sing doleful strains with much palaver,
But (what is seldom done to wives)
I'll praise Eliza *while I have her!*

Boston, Feb. 1812. W. M.

Mathematical Department.

MATHEMATICAL QUESTIONS

IN NO. IV. ANSWERED.

1 Qu. (43) *answered by Mr. James Cattrall, Fifer, 2nd R. L. Militia.*

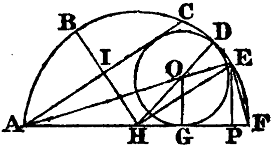
Put x=his age, then by the question $\sqrt[3]{(x^2-18)}=x-12$; by cubing each side, we have $x^2-18=x^3-36x^2+432x-1728$, or $x^3-37x^2+432x=1710$; from whence x is found$=19$ years.

The same by Mr. C. De Weight, Parsondrove.

Let $x+12$=his age, then its square is $x^2+24x+144$, and, by the question, $x^2+24x+144-18=x^3$, or $x^3-x^2-24x=126$; whence $x=7$, and his age is 19 years.

It was answered also by Messrs. *W. Allen*, Burstwick; *J. Baines*, Horbury Bridge; *W. Bean*, Ridgemont; *B. Brooke*, Headingley; *J. Butterworth*, Haggate; *J. Cummins*, Holbeck; *W. Dunn*, Broughton; *E. S. Fyres*, Liverpool; *J. Gawthrop*, Leeds; *P. Grey*, Hornsey; *J. Hine*, Plymouth; *A. Hirst*, Marsden; *R. Maffett*, Plymouth; *A. Nesbit*, Farnley; *W. Putsey*, Pickering; *Rylando; Silvanus Shaw*, Wortley; *T. Thornton*, Ridgemont; *J. Tomlinson*, Liverpool; and *J. Wynward*, Plymouth.

2. Qu. (44) *Answered by Mr. J. Gawthrop, Leeds.*



Let AI=IC be the radius of the segment's base, BH=AH=HF=DH, that of the given hemisphere, and OD=OG=that of the inscribed sphere; through O draw AE which will bisect the ∠CAF; let fall the perp. EP and join EF.

Now, D being the point where the circles touch, DO and DH are in the same right line, both of them being perp. to a tangent at D, Put $DH=10=a$, and $DO=x$; then, $HO=a-x$, $HG=\surd(a^2-2ax)$, $AG=a+\surd(a^2-2ax)$ and $AO=\surd(AG^2+OG^2)=\surd\{2a^2+2a\surd(a^2-2ax)-2ax+x^2\}$, also by sim. triangles $AO : OG :: AF : EF=\frac{2ax}{AO}$; but $AE=\surd(AF^2+EF^2)=\frac{2a^2+2a\surd(a^2-2ax)}{AO}$, and $AO : OG :: AE : EP=\frac{2a^2x+2ax\surd(a^2-2ax)}{AO^2}$. But $\angle EHP=\angle IAH$ (for $\angle EHP=2\angle EAP$ *Eu.* 20.3), and $\angle AIH=\angle HPE$, also $AH=HE$, therefore $HI=EP$, and $BH-HI=BH-EP=BI$ the alt. of the segment $=a-\frac{2a^2x+2ax\surd(a^2-2ax)}{AO^2}$. Again, put $.5236=p$, then the solidity of the segment is $BI^2\times(3AF-2BI)\times p$, which by the question is equal to the solidity of the sphere $=8px^3$; now by substituting the value of AO, and dividing by p, we shall have

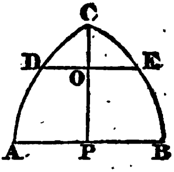
$$\left(a-\frac{2a^2x+2ax\surd(a^2-2ax)}{2a^2+2a\surd(a^2-2ax)-2ax+x^2}\right)\times\left(4a+\frac{4a^2x+4ax\surd(a^2-2ax)}{2a^2+2a\surd(a^2-2ax)-2ax+x^2}\right)=8x^3.$$

From this equation x is found $=4.542$, then $BI=3.7825$, and the solidity of the segment $=392\frac{1}{2}$.

When the ends of the frustum are parallel; put x = the height of the segment, then $a-x$ is the diam. of the greatest globe that can be inscribed in the remaining frustum; also the solidity of the segment is $(6ax^2-2x^3)\times p=(a-x)^3\times p$, or $300x+30x^2-x^3=1000$, from whence $x=2.6796$; which is much less than $BI=3.7825$, found above.

Answers to this question were transmitted by Messrs. *W. Allen, J. Baines, W. Bean, B. Brooke, J. Butterworth, J. Cattrall, J. Cummins, W. Dunn, T. Ford, J. Hine, A. Hirst, R. Maffett, A. Nesbit, W. Putsey, Rylando, S. Shaw, T. Thornton, J. Tomlinson,* and *J. Winward.*

3. Qu. (45) *Answered by Mr. J. Cummins and Mr. S. Shaw.*



Let the base $AB=2b$, $CP=a$, and put $CO=x$; then by the property of the parabola $a : b^2 :: x : \frac{b^2x}{a}=DO^2$; therefore, $4OD^2 \times OP \times .7854 = \left(\frac{4ab^2x-4b^2x^2}{a}\right) \times .7854$ is the content of the cylinder, to which adding the part $DCE=\frac{4ab^2x^2}{2a}$, we have their sum $=\left(\frac{4ab^2x-2b^2x^2}{a}\right) \times .7854 = ab^2 \times .7854 =$ half the paraboloid by the question; hence $x=a-2a\sqrt{2}$, and the radius of the cylinder's base is $b\sqrt{(1-\sqrt{\tfrac{1}{2}})}$. *Note.* If the part DCE were to be left also, the alt. of the cylinder taken away is in that case $=\frac{a}{2}$, and the radius of its base $\sqrt{\tfrac{1}{2}}\,b^2$.

The same by Mr. J. Baines and Mr. B. Brooke.

Put $AB=2a$, $CP=b$, $.7854=p$ and $CO=x$; then, by the parabola, $b : a^2 :: x : DO^2=\frac{a^2x}{b}$; therefore, the content of the cylinder $=4pa^2x-\frac{4pa^2x^2}{b}$, and the content of the top part $CDE=\frac{2pa^2x^2}{b}$; but the sum of these contents is, by the question $=$ the content of half the paraboloid, that is, $4pa^2x-\frac{4pa^2x^2}{b}+\frac{2pa^2x^2}{b}=pa^2b$; whence $4bx-2x^2=b^2$, and $x=b-\frac{b}{\sqrt{2}}=b-\tfrac{1}{2}b\sqrt{2}$, therefore, $OP=\frac{b\sqrt{2}}{2}$ and $DE=a\sqrt{(4-2\sqrt{2})}$.

Ingenious answers to this question were sent by Messrs. *Butterworth, Dunn, Gawthrop, Hine, Hirst, Maffett, Nesbit, Putsey, Rylando, Tomlinson,* and *Winward.*

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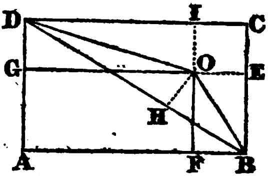
4. Qu. (46) *Answered by Messrs. S. Shaw and C. De Weight.*

Put the diameter of the sphere $=d$, the alt. of the segment $=x$ and $.5236=p$; then, the solidity of the segment is $3pdx^2-2px^3$, and its curve surface is $=6pdx$, therefore the ratio is $\frac{3pdx^2-2px^3}{6pdx}$, or $\frac{3dx-2x^2}{6d}$, which will be a max. when $3dx-2x^2$ is so, that is $3d\dot{x}-4x\dot{x}=0$ and $x=\frac{3}{4}d$.

Exactly in the same manner the question was answered by Messrs. *Baines, Brooke, Butterworth, Dunn, Gawthrop, Hine, Hirst, Maffett, Nesbit, Putsey, Rylando, Tomlinson,* and *Winward.*

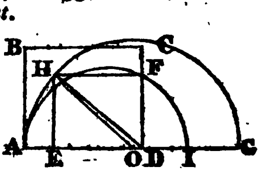
5. Qu. (47) *Answered by Mr. Gawthrop, Mr. J. Whitley, and Rylando.*



Construction. Let ABCD be the given rectangle. Draw the diagonal BD, and bisect the angles DBC, BDC, by the straight lines BO, DO; and from their intersection O draw OE perp. to BC, and BC will be the breadth of the walk.

Demonstration. Draw the lines as in the figure; then, by the construction O is evidently the centre of the circle inscribed in the triangle DBC; therefore, the figure OHBE=OEBF. In like manner we have OHDI=OGDI: consequently, OGDI+OFBE+OECI=OHDI+OHBE+OECI; that is, the area of the walk is equal to the area of the triangle DCB, or equal the area of half the rectangle ABCD.

Again, by Mr. J. Butterworth, Haggate; and Mr. A. Hirst.

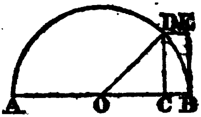


Let ABCD represent the garden, and, upon AD continued, take DG=AB, and bisect DG in I, on AG, AI, describe semicircles, and from the intersection F of DC with the less semicircle, draw F H parallel to B C, meeting the other semicircle in H, let fall H E perp. to A D, and A E will be the breadth of the walk.

For $AD.DI = DF^2 = EH^2 = AE.EG$. To each side of this equation add $AE^2 - AD.DG$, then $AD.DI + AE^2 - AD.DG = AE.EG + AE^2 - AD.DG$; or $AD.DG - AD.DI - AE^2 = AD.DG - AE.EG - AE^2$, and $AD.DI = AD.DG - AG.AE + AE^2$, therefore $(AD - AE).(DC$ or $DG - AE) = AD.DI$ = half the area of the rectangle A B C D.

Calculation. Because $AD.DI = 100 \times 40 = DF^2 = EH^2 = 4000$, and $HO^2 - HE^2 = EO^2 = 4100$, therefore $EO = 64.031$, and $AO - EO = AE = 25.969$ feet.

Otherwise by Messrs. Baines, Hine, Maffett, and Winward.



Make AB = the sum of the length and breadth of the garden, on which as a diameter describe the semicircle A D B.

From B draw the tangent B E equal to the side of a square whose area is equal to half the area of the garden, draw D E parallel to A B, and from D let fall the perp. D C, so shall C B be the breadth of the walk.

For $CB \times (AB - CB) = CD^2$, by a known property of the circle.

Calculation. In the right angled triangle C O D we have OD and CD given to find OC = 64.03124237, and OB — OC = CB = 25.9687, &c. yards is the breadth of the walk. This question is in effect the same as the following lineal section, *viz.* given the sum and rectangle of two right lines, to determine those lines.

This question was answered also by Messrs. *W. Allen, W. Bean, B. Brooke, J. Cattrall, W. Dunn, E. S. Eyres, A. Nesbit, W. Putsey, S. Shaw, W. Thornton,* and *J. Tomlinson.*

6. Qu. (48) *Answered by Mr. Gawthrop.*

The distance which B runs on the circumference is easily found = 7260 yards, and A runs 14520 on a right line. But B has to run the sum of the chords of 1° 30′,

3°, $4^\circ\,30'$, &c. to 180° as he returns with his stones; therefore, put s, s', s'', &c. $=$ the nat. sines of $45'$, $1^\circ\,30'$, $2^\circ\,15'$, &c. then $2s$, $2s'$, $2s''$, &c. will be the chords of double those arcs, and putting the radius of the semicircle $=r$, we shall have the sum of all the chords $= 2rs + 2rs' + 2rs''$, &c. $= 2r \times (s + s' + s'' \ldots\ldots) = 2r \times 76.89328 = 5874$ yards, and $7260 + 5874 = 13134$, the distance B must run, then 8 : 7 :: 14520 : 12705, the distance B runs while A runs 14520; therefore, $13134 - 12705 = 429$ is the distance that B has to run when A has finished, consequently B will lose.

The same by Messrs. Dunn, Hine, Maffett, and Winward.

First $(240+2) \times 60 = 14520$ yards, the distance run by A; and in order to find the distance run by B, we must find the greatest and least chords; these, by trig. are easily found $=76.3805$ and $.9998$, the diam. being $= 76{,}394$. Then, p. 8, Introduction to Hutton's Tables, "as the least chord in a semicircle is to the diameter, so is the sum of the least chord diameter and greatest chord, to double the sum of all the chords." From whence we get 5874.272, the distance travelled by B on the chord lines, and $(120+1) \times 60 = 7260$ is the distance on the semicircle, therefore $7260 + 5874.272 = 13134.272 =$ B's whole distance; but 8 : 7 :: 14520 : 12705 $=$ the distance run by B while A performs his whole journey, of course A is the winner.

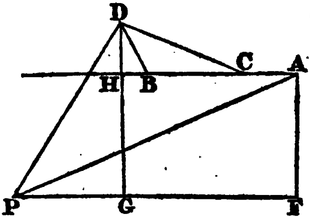
Again by Messrs. Cattrall and Hirst.

By adding together all the nat. sines of half the arcs on which the stones lay, that is the nat. sines of $45'$, $1^\circ\,30'$, $2^\circ\,15'$, &c. to 180°, we get 76.89328, and $76.89328 \times 2 = .153.78656 =$ sum of all the chords to radius 1. But $120 \div 3.1416 = 38.19278 =$ rad. of the semicircle, which multiplied by 153.78656 we have 5873.538, to which add half the distance run by $A = 121 \times 120 \div 2 = 7260$, and we have 13133.538 yards for the distance run by B, that of A being 14520, which $\times\, \frac{7}{8}$ gives 12705, so that when A had completed his task, B had still $13133.538 - 12705 = 428.538$ yards to run, consequently B lost the wager.

Other similar answers were sent by Messrs. ***Baines,***

Butterworth, Nesbit, Putsey, Rylando, Shaw, Tomlinson, and *De Weight.*

7. Qu. (49) *answered by Mr. J. Gawthrop, and Rylando.*



Let A be the port sailed from, and P the place to which the ship is bound, also let C be the place where the ship fell in with the current, then while the wind would carry the ship from C to B, the current would carry her to D, of course D is the place of the ship when she has sailed 60 miles in the current. Now in the right angled triangle DHB, we have $DB = 20$, and the $\angle B = 67° 30'$, to find $DH = 18.4775$, and $HB = 7.6536$; also, in the right angled triangle DGP, we have $DG = HG + DH = 138.4775$, and the $\angle D = 22° 30'$, to find $PG = 57.3592$, and $DP = 149.8869$; the direct distance to P. But $PF = AC + CB + HB + PG = 161.0128 =$ the departure, therefore, $\sqrt{(PF^2 + AF^2)} = AP = 200.8$, is the distance from P to A, hence the angle FPA is found $= 36° 41' 47''$, and the course $53° 18' 13''$ N. E. In this solution, the distance sailed in the current is supposed to be measured by the log.

Very good answers to this question were sent by Messrs. *Allen, Baines, Bean, Brooke, Butterworth, Cattrall, Dunn, Eyres, Hine, Hirst, Maffett, Nesbit, Shaw, Thornton, De Weight,* and *Winward.*

8. Qu. (50) *Answered by Messrs. Butterworth, Gawthrop, and Rylando.*

The pressure of the atmosphere being taken off at the bottom, or against the orifice, it must be added to the pressure of the water in the vessel; therefore, reckoning the pressure of the air $= 34$ feet of water, the velocity of the effluent water will be the same as from a vessel full of water, the altitude of which is 38 feet, and the time of evacuation will be the same as that in which the surface of the water in this vessel would be depressed 4 feet. This being premised, put the area of the base of the vessel$=A$, that of the orifice$=a$, $38=h$, $g=16\frac{1}{12}$, and $x=4$ feet; then, by art. 705, *Marrat's Mechanics*, we have the time of discharging the vessel to the depth of 4 feet$=\frac{A}{a\sqrt{g}}(\sqrt{h}-\sqrt{h-x})=12m.\ 45s.$

Other answers were given by Messrs. *Brooke*, *Dunn*, *Harvey*, *Hine*, *Hirst*, *Maffett*, *Nesbit*, *Putsey*, *Tomlinson*, and *Winward*.

9. Qu. (51) *Answered by Mr. A. Nesbit.*

Put $a=x-2$, $b=2x-2$, and $c=(x-2)+(2x-2)=3x-4$; then $(a+b)\times c=9x^2-24x+16$ is a sqr. and $a^2+2b=x^2$ is a sqr. it therefore only remains necessary to make b^2+2a, or $4x^2-6x$ a sqr. suppose it$=(2x+2p)^2=4x^2-8px+4p^2$; then, by reduction, $x=\frac{4p^2}{8p-6}$.

Let $p=4$, then $x=\frac{64}{26}$; hence, $a=\frac{12}{26}$, $b=\frac{76}{26}$, and $c=\frac{88}{26}$, which are three numbers answering the conditions of the question.

Otherwise by Mr. A. Hirst.

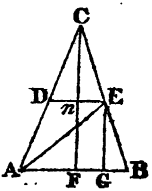
Put $a+b=c$ then the first formula $(a+b)\times c$ is a sqr. again, put $a^2+2b=(a+n)^2$, and by reduction we have $a=\frac{2b-n^2}{2n}$, which being subsituted in the last formula it becomes $b^2+\frac{2b-n^2}{2n}=$ a sqr. which equate to $(m-b)^2$ and we get $b=\frac{m^2n+n^2}{2mn+2}$. Take $n=1$, and $m=2$, and we have $a=\frac{2}{6}$, $b=\frac{5}{6}$, and $c=\frac{7}{6}$, which numbers will answer the conditions of the question.

Otherwise by Messrs. Hine, Maffett, and Winward.

When $c=a+b$, then $(a+b)\times c$ is evidently a square; we have then only to make the other two formulæ squares. Put $b=2a+2$, then $a^2+2b=a^2+4a+4$ is a square, and $b^2+2a=4a^2+10a+4$ must be a square, equate it to $(2a-n)^2=4a^2-4an+n^2$, and we have $a=\frac{n^2-4}{4a+10}$, where n may be taken at pleasure provided it be greater than 2.

And thus nearly it was answered by Messrs. *Baines*, *Dunn*, *Eyres*, *Gawthrop*, *Harvey*, *Putsey*, *Rylando*, *Shaw*, and *Tomlinson*.

10. QU. (52) *Answered by Mr. J. Gawthrop, and Mr. S. Shaw.*



Let ABC represent the cone, and put $.7854=p$, $FG=\frac{1}{2}DE=x$, $CF=10$, and $AF=FB=1$; then, $GB=1-x$, $AG=1+x$, and $FB:CF::BG:EG=10-10x$, also $\sqrt{(AG^2+EG^2)}=AE=\sqrt{(101-198x+101x^2)}=$ the transverse diameter of the section; and by conics $\sqrt{(AB\times DE)}=2\sqrt{x}$ is the conjugate; therefore, $AE\times2\sqrt{x}\times p=$ the area of the elliptic section is to be a maximum, or $AE\times\sqrt{x}$, that is $\sqrt{(101x-198x^2+101x^3)}$, or $101x-198x^2+101x^3$, must be a max.; which put into fluxions, and reduced, we have $x^2-\frac{132}{101}x=-\frac{1}{3}$; whence $x=\frac{66}{101}-\sqrt{\frac{2867}{30603}}=34739$; $2\sqrt{x}=1.1787$; $AE=6.6637$, and the area of the elliptic section 6,1689 square feet, which at 8*s.* per foot will come to £2. 9*s.* 4*d.* Now the solidity of the cone is easily found = 10,472 feet, which at 4*s.* *per* foot comes to £2. 1*s.* 10½*d.* and their difference, which is 7*s.* 5½*d.* is the loss the carpenter sustained by accepting the second proposal.

Again, by Mr. A. Nesbit, of Farnley.

Put $Cn=x$, then $Fn=10-x$, and by sim. triangles $CF:AB::Cn:DE=\frac{x}{5}$. Also $\frac{1}{2}AB-\frac{1}{2}DE=1-\frac{x}{10}$, $=GB$, whence $AG=1+\frac{x}{10}$, and $AE^2=AG^2+GE^2=x^2-19.60396x+100$. But, by conics, $AB\times DE=.4x=$ sqr. of the conjugate, and the area of the elliptic section being as the rectangle of these squares, we have $x^2-19.60396\,x+100\times.4x$, or $4x^3-$

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$7.841584x^2 + 40x$ a max. in fluxions, &c. we have $x^2 - 13.0693x = 33.\frac{1}{3}$; whence $x = 3.474$, and the area of the ellipse, as in the preceding solution 6.1689, and 7*s.* 5½*d.* = the carpenter's loss.

This question was answered also by the following gentlemen, Messrs. *J. Cattrall, Dunn, Hine, Hirst, Maffett, Rylando, Tomlinson, De. Weight,* and *Winward.*

11. Qu. (53) *By Mr. J. Whitley.*

Denoting the three required numbers by x, y, and z, the question requires us to transform the four following formulæ into squares; viz. $xy + z^2$, $xz + y^2$, $yz + x^2$, and $x + y + z$ are all to be squares. Assuming $x = 4(y + z)$ the first and second formulæ become squares, and by substitution, $yz + x^2 = 16y^2 + 33yz + 16z^2$, $=$ (suppose) $(pz - 4y)^2 = p^2z^2 - 8pyz + 16y^2$; hence $(p^2 - 16) \times z = (33 + 8p) \times y$.

Take $y = p^2 - 16$, then $z = 33 + 8p$, and $x = 4p^2 + 32p + 68$, therefore $x + y + z = 5p^2 + 40p + 85 = \square = a^2$. Let $p = n - 2$; then $a^2 = 25 + 20n + 5n^2 = (5 - sn)^2 = 25 - 10sn + s^2n^2$, and $n = \frac{20 + 10s}{s^2 - 5}$, where s is indeterminate. Ex. Taking $s = 3$, we have $n = \frac{25}{2}$, $p = \frac{21}{2}$, $y = p^2 - 16 = \frac{377}{4}$, $z = 117$ and $x = 845$, or multiplying each by 4, a square number, we shall have $x = 13 \times 260 = 3380$, $y = 13 \times 29 = 377$, and $z = 13 \times 36 = 468$, which are three numbers answering the conditions of the question.

The same answered by Mr. S. Ryley, Armley Mills.

By the question, the formulæ to be made squares are $x + y + z$, $x^2 + xy$, $y^2 + xz$, and $z^2 + xy$. Let $x = 4(y + z)$, then the second and third formulæ become squares, and the other two will stand thus: $16y^2 + 33yz + 16z^2$, and $(y + z) \times 5$. Suppose $y = 5n$, and $z = 5r$, they then become $16n^2 + 33nr + 16r^2$, and $n + r$; make $n + r = p^2$, then $n = p^2 - r$, which substituted for n in the other formula, it becomes $16p^4 + rp^2 - rv$, which must be a square. Assume $4p^2 - r^2$ for its root, and r is found $= \frac{8v + 1}{v^2 + 1} \times p^2$, where v may

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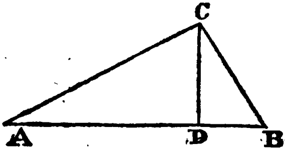
be any number at pleasure. Ex. Let $v = 13$, then $r = \frac{21}{34}p^2$, and $n = \frac{13}{34}p^2$, consequently $y = \frac{65}{34}p^2$, $z = \frac{105}{34}p^2$, and $x = \frac{680}{34}p^2$; in order to have whole numbers, take $p = 34$, then 2210, 3570, and 23120 will be three numbers answering the conditions of the question. And thus nearly was the question answered by *Mr. Baines, Mr. A. Hirst, Mr. Dunn, Mr. Hine, Mr. Maffett, Mr. Nesbit, Rylando, and Mr. Winward.*

Otherwise, by Mr. Gawthrop,

The question requires that $x + y + z$, $z^2 + xy$, $y^2 + xz$, and $x^2 + yz$, may be all squares; put $x + y + z = a^2$, then $z = a^2 - x - y$, which substitute for z in the second, and it becomes $a^4 - 2a^2y + y^2 - 2a^2x + 3xy + x^2$, which equate to $(a^2 + y - x)^2$, and we find $x = \frac{4a^2}{5}$, hence $z = \frac{a^2 - 5y}{5}$, and, by substitution, the third and fourth become $\frac{4a^4 - 20a^2y + 25y^2}{25}$, and $\frac{5a^2y - 25y^2 + 16a^4}{25}$, the first of which is a square already, and the second will be a square when the numerator is a square. Make $5a^2y - 25y^2 + 16a^4 = (4a^2 - \frac{y}{2})^2$, and we shall find $y = \frac{4a^2}{101}$; hence $x = \frac{404a^2}{505}$, $y = \frac{20a^2}{505}$, and $z = \frac{81a^2}{505}$, where a may be taken at pleasure.

12. Qu. (54) *Answered by Rynaldo.*

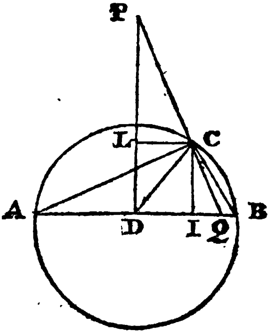


Since the base AB and the ∠ BAC are given, if the point B be supposed to approach towards D, it is evident that the difference BC—DC will decrease till B coincides with D, when the difference will be nothing. Hence the construction is obvious; for, if a perp. be erected at the point B, and AC drawn to meet it, making the given ∠ with AB, the thing will be done.

Or, put AB $= a$, AD $= x$, sin. ∠ DAC $= s$, its cosine $= c$; then DB $= a - x$, and by Trig. $c : x :: s :$ DC $= \frac{sx}{c} = nx$ by substitution. Hence CD $= \surd(n^2x^2 + a^2 - 2ax + x^2)$; therefore, by the question, $\surd(n^2x^2 + a^2 - 2ax + x^2) - nx$ is a minimum, in fluxions $\frac{n^2x\dot{x} - a\dot{x} + x\dot{x}}{\surd(n^2x^2 + a^2 - 2ax + x^2)} - n\dot{x} = o$, or $n^2x - a + x = n\surd(n^2x^2 + a^2 - 2ax + x^2)$, which being squared and reduced, we get $x^2 - \frac{2ax}{n^2+1} = \frac{n^2a^2 - a^2}{n^2+1}$, whence by completing the square, &c. $x = a$, the same conclusion as above.

Similar answers were received from *Messrs. Baines, Butterworth, Dunn, Eyres, Gawthrop, Hine, Hirst, Maffett, Nesbit, Whitley,* and *Winward.*

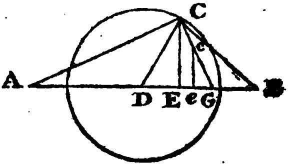
13 Qu. (55) *By Mr. E. S. Eyres, and Rylando.*



Analysis. Let ABC be the triangle sought, CD the line bisecting the base, and CI perp. to AB. By a known property of plane triangles, $AC^2 + BC^2 = 2AD^2 + 2DC^2$, and by adding AB^2 to each, we have $AB^2 + AC^2 + BC^2 = \frac{3}{2}AB^2 + 2DC^2$; but by the question $AB^2 + AC^2 + BC^2$, and $2DC^2$ are given, therefore AB becomes known, and the sum of CI and 2 ID is equal to a given line, or a maximum. Draw DP parallel to IC, and make it equal to the given sum; join PC, and let it meet AB in Q, also draw CL parallel to BA; then DL $=$ IC, and DP $=$ IC $+$ 2DI $=$ IC $+$ 2CL; hence PL $=$ 2 LC, and PD $=$ 2 DQ (by sim. trian.) therefore Q is a given point, and PQ the right line, which is obviously the locus of the vertex C, given in position; and as the locus of C is likewise a circle to centre D and radius DC, the intersection of these loci, or the point C, is given, and the triangle determined.

In the case of the *max.* the vertex C will be determined when PQ touches the circle in C.

COMPOSITION. *By Mr. J. Butterworth.*

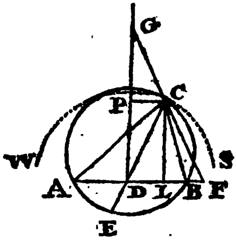


Construction. Take AB = the side of a square which is equal to one third of the difference between twice the given sum of the squares of the sides, and four times the square of the line bisecting the base; bisect AB in D, and with the centre D, and rad. equal to the given line, describe a circle; upon DB take DG equal to half the given sum, and on GD take G*e* of any length, and at *e* erect the perp. *ec* = 2 G*e*; through G and *c* draw GC meeting the circle in C; join AC, BC, and ABC will be the triangle required.

Demonstration. Join DC, and demit CE perp. to AB; then, by construction, $3\,AB^2$ = twice the given sum of the squares of the sides, minus $4\,DC^2$; but $2\,AC^2 + 2\,BC^2 = 4\,AD^2\ (AB^2) + 4\,DC^2$; therefore, $2\,AB^2 + 2\,AC^2 + 2\,BC^2 = 3\,AB^2 + 4\,DC^2$, or $3\,AB^2 = 2\,AB^2 + 2\,AC^2 + 2\,BC^2, - 4\,DC^2$; consequently, $AB^2 + AC^2 + BC^2$ = the given sum of the squares.

Again, by construction, $ec = 2\,eG$; hence, by sim. triangles, $EC = 2\,EG$; therefore, $2\,DE \times (AE - BE) + 2\,EG\ (EC)$ = to the given sum. *Q. E. D.*

Again, by Messrs. Dunn, Hine, Maffett, and Winward.



Analysis. Let ACB be the triangle required, inscribed in the circle ACBE; draw CD bisecting the base AB in D, and produce it to meet the circle in E. Then, by the property of the circle, $CD \times DE = AD \times DB = AD^2$; also, $AC^2 + BC^2 = 2\,AD^2 + 2\,DC^2$; therefore, $AC^2 + BC^2 + AB^2 = 2\,CD \,.\, DE + 2\,CD^2 + 4\,CD \,.\, DE = 6\,CD \,.\, DE + 2\,CD^2$ = a given space.

But CD is given; therefore, 6 CD . DE, or CD . DE $= AD^2$ is given, and AB becomes known; hence, the following

Construction. Take A B, as determined by the above analysis, and bisect it in D with the indefinite perp. DG; take DG = the given sum of the perp. and the difference of the segments of the base; and, in DB, produce if necessary, take DF $= \frac{1}{2}$ DG, join GF, and with centre D and radius = the given line bisecting the base, describe the arc WCS cutting GF in C; join AC, BC, and ABC is the triangle required.

Demonstration. Demit the perp. C L, and draw CP parallel to AB; then, by sim. trian. GD : DF :: GP : PC. But, GD = 2 DF, by construction; therefore, PG = 2 PC = 2 DL = AL − LB; hence, CL (PD) + 2 DL (GP) = GD = the given line, by construction; the rest is evident.

And almost exactly in the same manner as this last, were the answers by *Messrs. Baines, Gawthrop, Hirst,* and *Tomlinson.*

Mr. *Gawthrop* is requested to send for any book he may think proper, the price of which does not exceed Half a Guinea.

NEW MATHEMATICAL QUESTIONS

TO BE ANSWERED IN NO. VIII.

1. Qu. (75) *By Mr. W. Dunn, Broughton.*

A GENTLEMAN has a circular garden which contains just half an acre of land, and is desirous of having a fish-pond in the centre, in the form of the segment of a sphere, the diameter and depth of which are to be as 8 to 1;—required the dimensions of the pit, when the earth dug out will cover the remainder of the garden one inch deep.

2. Qu. (76) *By Mr. J. Baines, jun. Horbury Bridge.*

Having a globe of wood, and wanting to know its weight, I immersed it in a vessel of fresh water, and on taking it out, I found that the surface of the wet part was 209.44, and that of the dry part 104.72 inches;—required its weight.

3. Qu. (77) *By Mr. J. Cattrall, Fifer, 2nd R. L. Militia, Plymouth.*

A frustum of a cone whose diameters and altitude are 6, 10, and 12, is standing on its less end; at what distance from the bottom must it be cut by a plane parallel to its base, so that the solidity of each part may be equal?

4. Qu. (78) *By Mr. Baines, jun. Horbury Bridge.*

On the 26th of June, 1808, I observed when the sun's shadow was *parallel* to the front of a house, that the true altitude of his centre was 41° 55′, and when his shadow was *perpendicular* to the front of the same house, his altitude was 58° 8′;—required the declination of the front wall, and the latitude of the place where it stands.

5. Qu. (79) *By Mr. Dunn, Broughton.*

From a glass in form of the frustum of a cone, the top diameter of which is 4, bottom diameter 2, and depth 3 inches; A. drank till the surface of the liquor and top diameter made an angle of 43°, and B. drank the remainder;—how much must each of them pay, if the liquor cost sixpence; and what is the length required to complete the frustum into a cone?

6. Qu. (80.) *By Mr. Gawthrop, Master of the Lancasterian School, Leeds.*

Determine a point in the side of a cylinder whose length is 10, and the diameter of its base 2 feet, to which if a string be fastened, and the cylinder suspended by it, the axis of the cylinder may make an angle of 25° 15′, with a plane parallel to the horizon.

7. Qu. (81) *By Mr. R. Maffett, Plymouth.*

Required, in finite terms, the fluent of $\frac{\dot{x}}{2x^2-3x+1}$.

8. Qu. (82) *By Mr. J. Whitley, Masbro'.*

Required the fluent of $\frac{\dot{z}}{d}\sqrt{(d^2-4dz+8z^2)}$, generated while z increases from o to $d=10$.

9. Qu. (83) *By Mr. A. Nesbit, Farnley, Leeds.*

Given, $\left\{\begin{array}{l} x^2-y^2+xy+xz-yz \\ x^2-z^2+xy+yz-xz \\ y^2-z^2+yz+xz-xy \end{array}\right\}$ To find x, y, and z, in positive whole numbers, when the 3 formulæ become squares.

10. Qu. (84) *By Mr. J. Butterworth, Haggate, near Oldham.*

If to one end of a given rod, a string of a given length be fastened, and to the other end of the string a given weight; if then, the rod and weight thus connected revolve in a vertical plane about the other end of the rod; what will be the locus of the centre of gravity of the rod and weight, supposing the string always to remain perp. to the horizon?

11. Qu. (85) *By Mr. J. Hine, 2nd R. L. Militia.*

ACB is a given semicircle, CD any ordinate perpendicular to the diameter AB, and P a point in DC produced, such that $DP \times DC = AC^2$; required the equation and quadrature of the curve which defines the locus of P.

12. Qu. (86) *By the same.*

ABC is a given quadrant of a circle whose centre is A, and D any point in the curve; draw DE perp. to the radius AB; in AB take AF = DE, and draw FG parallel to DE meeting FG in P, and the circle in G; to determine the equation and quadrature of the curve which is the locus of P.

13. Qu. (87) *By Mr. J. Whitley.*

In a horizontal dial, the angle included between the hour lines of 4 and 5 was observed to contain just 21 degrees; to find, geometrically, the latitude of the place it was made for.

14. Qu. (88) *By Mr. J. Winward, 2nd R. L. Militia.*

Given, the base and vertical angle, to construct the plane triangle, when the area has a given ratio to the square of the sum of the sides.

15. Qu. (89) *By the same.*

AB, AC, are two right lines given by position, and

B is a given point in AB; it is required to determine *geometrically*, a point C in AC, such, that drawing CD perp. to AB, n times DB minus m times DC may be equal to a given line.

16. Qu. (90) *By Mr. R. Maffett.*

It is required to construct a triangle, given in species, such, that its three sides and the line bisecting its vert. angle may pass through four given points in the same right line.

17. Qu. (91) *By Mr. J. Kay, Royton, near Oldham.*

Through a given point P, to draw a right line, so that if right lines KD, SR, be drawn from two given points K, S, to make given angles therewith, the rectangle PD × PR may be equal to a given space.

18. Qu. (92) *By Mr. A. Hirst, Marsden.*

If the outer diameter of a spur-wheel containing 1000 teeth be 60 feet, the depth to which the teeth work being 1.3 inches; it is required to determine the outer diameters of two other wheels, one of 100, and the other of 10 teeth, so that they may either drive the great wheel, or be driven by it without shaking: also to infer from hence, whether it be possible, upon true mechanical principles, to make a complete set of what are called *geer-wheels* of different diameters, which may all work together freely.

19. Qu. (93) *By Rylando.*

Given, the vertical angle, the sum or difference of the sides, and the length of a line drawn from the vertical angle dividing the base in a given ratio; to determine the plane triangle.

20. Qu. (94) *By Mr. G. Harvey jun. Plymouth.*

Three points, A, B, C, are given in position; it is required to determine the position of a fourth, so that $n \times CP^2$, minus a certain given space, may be equal to $p \times AP^2 \pm q \times BP^2$.

21. Qu. (95) *By Mr. Rt. Maar, Holland-Fen.*

P is a given point in the diameter AB produced of a given circle AEBA; draw DE perp. to AB, meeting the circumference of the circle in E; join PE, and let S be the centre of the circle. In ED take DN always $= \frac{DE^2 \times PS}{PE}$; to determine the equation and area of the curve which is the locus of the point N. (Newton's Princip. Prop. 80.)

22. Qu. (96) *By Mr. J. Whitley.*

From four given points in the circumference of a given circle, to draw four right lines to meet in a point in the circumference, so that their continual product may be equal to a given space, or a maximum.

INVESTIGATION OF FORMULÆ FOR THE VALUES OF THE TANGENT AND COTANGENT OF AN ARC.

By Mr. G. Harvey, jun. Plymouth.

Let x represent any arc or variable angle, radius being unity; then, by the principles of finite differences, we shall have $\Delta \sin. x = \sin. (x + \Delta x) - \sin. x$; but, by trigonometry, $\sin. (x + \Delta x) = \sin. x \cos. \Delta x + \cos. x \sin. \Delta x$; therefore, $\Delta \sin. x = \sin. x \cos. \Delta x + \cos. x \sin. \Delta x - \sin. x = \cos. x \sin. \Delta x - (1 - \cos. \Delta x) \sin. x$; and, by a similar process, we obtain, $\Delta \cos. x = - \sin. x \sin. \Delta x - (1 - \cos. \Delta x) \cos. x$.

Let us now, to simplify, put $\sin. \Delta x = m$, and $1 - \cos. \Delta x = n$; then the preceding formulæ for the value of $\Delta \sin. x = m \cos. x - n \sin. x$, and $\Delta \cos. x = - m \sin. x - n \cos. x$, and the first of these equations multiplied by $-n$, and the second by $-m$, produces $-n \Delta \sin. x = -mn \cos. x + n^2 \sin. x$; and $-m \Delta \cos. x = m^2 \sin. x + mn \cos. x$; the sum of these gives $-n \Delta \sin. x - m \Delta \cos. x = m^2 \sin. x + n^2 \sin. x$, whence $\sin. x = \frac{-n \Delta \sin. x - m \Delta \cos. x}{m^2 + n^2}$, and by a nearly similar method, we find $\cos. x = \frac{m \Delta \sin. x - n \Delta \cos. x}{m^2 + n^2}$; hence $\frac{\sin. x}{\cos. x} = \text{tang.}\, x = \frac{-n \Delta \sin. x - m \Delta \cos. x}{m \Delta \sin. x - n \Delta \cos. x}$, and $\frac{\cos. x}{\sin. x} = \text{cotang.}\, x = \frac{m \Delta \sin. x - n \Delta \cos. x}{-n \Delta \sin. x - m \Delta \cos. x}$.

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THE

ENQUIRER.

Juvenile Department.

COMMUNICATIONS

ON PRIZE SUBJECTS PROPOSED IN NO. VI.

ARTICLE VII.

Translated by Master C. Metcalf, Wisbeach.

TO GROSPHUS.

WHEN clouds obscure the lunar rays,
And well-known stars no longer shine,
To heav'n th' affrighted seaman prays,
In sweet retirement to recline.

The warlike Thracians ease require;
The quiver'd Parthians' martial train
With frequent pray'rs that peace desire,
Which gold and gems can never gain.

For neither wealth nor potent sway
Can soothe the tumults of the mind;
Nor can the Lictor chase away
The cares 'round Consuls' hearts entwin'd.

That man is bless'd in humble life,
Whose simple meals no pomp display;
Whose sweet repose no cares, nor strife,
Nor base desires can snatch away.

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Why need we, in a life so short,
  Wish unknown regions to explore?
Who can avoid all-searching thought,
  Though banish'd from his native shore?

Cares, swifter than the eastern wind,
  Pursue his bark o'er distant seas;
And swifter than the bounding hind,
  Disturb the flying horseman's ease.

The mind with present joys elate,
  Recks not the future, but with smiles
Dispels the clouds of adverse fate,
  And cheerfully its cares beguiles.

None is, however, truly bless'd:
  Achilles soon resign'd his breath,—
Tithonius, by old age oppress'd,
  Long sought in vain the arms of death.

Time, whom no mortal can withstand,
  To own whose pow'r we all agree;
To me may grant with lavish hand,
  What, Grosphus, he denies to thee.

Thy lands support a num'rous herd,
  Thy ample folds with flocks are stor'd;
And chariot horses, at thy word,
  With gen'rous neighings own their lord.

To me is giv'n, by certain fate,
  A genius to the Muse inclin'd;
Th' enjoyment of a small estate,
  And pride to scorn the vulgar mind.

Attested by his Father.

Other good TRANSLATIONS were sent by

Miss Abigail Kemp, Homerton,
Attested by Mrs. Batt.

Master John Smith, Renhold Vicarage,
Attested by the Rev. J. Crespin.

ARTICLE IX.

Translated by Miss M. R. Hough, London, who is requested to send for any book she may choose, the price of which does not exceed seven shillings.

THE GOOD MOTHER.

Behold a tender parent's smile,
Amidst her youthful offspring bless'd;
And, while among the playful band,
Lo, every pleasure fills her breast,

Now on her knee a babe she holds,
To one she gives a tender kiss;
Another to her bosom clasps,
And triumphs in a mother's bliss,

In all their little infant sports,
In all their pleasures and their sighs,
She with a parent's care attends,
And reads their wishes in their eyes.

In vain she tries to look severe,
In vain assumes an anger'd mien;
Ah! still reveal'd amidst the frown,
The parent's tender heart is seen.

'Tis thus that Providence divine
Presideth o'er the human lot;
To every one dispenses bliss,
To kings, and tenants of the cot.

An ear to mortals he affords,
He kindly hears their simple prayer,
Divides his gifts with equal hand,
And watches with a parent's care.

Then never let blind erring man
The justice of a God accuse;
Nor of his rigour e'er complain,
Should he a favourite wish refuse.

He means to fortify our zeal,
And oft a happier boon supplies;
Such is the goodness of the Lord,
He favours most when he denies.

Attested by her Father.

ARTICLE X.

"On Fraternal Love," by Miss Groves, Spalding Seminary, who is requested to send for any Book she may choose, the price of which does not exceed five shillings.

Amongst all the placid virtues which adorn the minds of youth, friendship and love between brothers and sisters may be considered the most capable of exciting admiration, and also of affording inexpressible delight.

For by being mutually charmed with each other's society, peace dwells in our bosoms; and by being acquainted with the means of alleviating the troubles, and contributing to the felicity and pleasure of each other; transport fills our hearts when we perceive that, by any exertions of ours, we can render each other still more comfortable and happy.

And should our aged parents, who have brought us up, and soothed us in all our infantile afflictions, be still alive, what an inestimable source of enjoyment will it be to us, to be able to reward their pious and tender cares, by enabling them to be partakers with us in the mutual love and happiness which we evince in the society of each other.

As the cooling shade refreshes and invigorates the weary traveller, after he has borne the labour and heat of the day; so does love between brothers and sisters enable their venerable parents to bear the heavy burden of declining age with cheerfulness and sasisfaction.

Timoleon, the Corinthian, is an excellent example of fraternal love: for being engaged in a battle with the Argives, and perceiving his brother fall down dead with the wounds which he had received from the enemy, he immediately leaped over his dead body, which he defended with his spear from plunder and insult; and, although grievously wounded in this generous enterprise, he would not retreat into a place of safety until he had seen the corpse carried off the field by his friends.

"Let the bonds of affection unite thee with thy brothers; that peace and happiness may dwell in thy father's house." "If thy brother is in adversity, assist him; if thy sister is in trouble, forsake her not."

It is easy to suppose from hence, that those parents who see their children flourishing around them, and crowning the hours of their past solicitude with the firmest and most sincere love to each other; must experience such unspeakable pleasure, as is entirely unknown to those who perceive peevishness and discord reigning amongst their offspring.

Attested by Miss S. and I. Hebard.

Other good THEMES were sent by
Miss Lathem, Miss Willerton, and Miss Green,
all of Spalding Seminary.

Attested by Miss S. and I. Hebard.

ARTICLE XII.

QUESTION I.

Answered by Masters *Atkin,* Sheffield Academy; *J. Bramall,* Lingarswood; *Richard Nicholson,* Horsforth; and *S. Stead,* Farnley.

In the triangle ABC, (which any one may easily make) let $AD = DB = 20$, $AC = 30$ and $CD = 25$; then (Hutton's Geom. 38) $CB^2 = 2AD^2 + 2DC^2 - AC^2 = 1150$; therefore $BC = \sqrt{1150} = 33.9116$; and now having the three sides given, the area is found $= 496.068 = 49a.\ 2r.\ 17\frac{1}{2}p.$

Again, by Master *J. Lamb,* Townhead Academy, Rochdale.

Put $BC = x$ then $x^2 + 30^2 = (20^2 + 25^2) \times 2$, and $x = \sqrt{(2050 - 900)} = 33.91165$; whence the three sides are given to find the area $= 496.07 = 49a.\ 2r.\ 17p.$

It was answered also by Master *Macann,* Lutton; Master *Burnell,* Master *Wheatley,* and Master *Beverley,* of Wortlery Academy; Master *J. Wadsley,* Surfleet Academy; Master *W. Harrison,* Burton Pidsea; and Master *Hamer,* Liverpool.

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QUESTION 2.

Answered by Master *Bramall*, Lingarswood, near Huddersfield.

If a square be inscribed in a circle, the diameter will be the diagonal, but if circumscribed, the diameter will be the side; therefore, the ratio will be the same as the square of the side to the diagonal, which is always as 1 to 2.

Otherwise by Master *J. Lamb.*

Let the side of the inscribed square $= 1$, then the sum of the squares of the two sides is $= 2$, which is $=$ the area of the circumscribing square; hence their proportion is as $2 : 1$.

This question was answered, also, by all those young gentlemen who answered the first question.

QUESTION 3.

Answered by Master *J. Bramall* and Master *J. Lamb.*

GENERAL RULE.

Multiply all the prime numbers, and the roots of such as are square or cube numbers continually; the product less one will be the number required.—(*Vyse's Arith.*)

Thus, $(2 \times 3 \times \sqrt{4}) - 1 = 11$, the number sought.

Again, by Master *Atkin*, Master *W. Harrison*, Master *Macann*, Master *Nicholson*, and Master *Wadsley*.

Let x be the number, then $\frac{x-1}{2}$, $\frac{x-2}{3}$ and $\frac{x-3}{4}$ must be whole numbers; put $\frac{x-1}{2} = p$, then, $x = 2p + 1$; substitute this for x in the second, and $\frac{2p-1}{3} =$ *wh*, but $\frac{3p}{3} - \frac{2p-1}{3} = wh = \frac{p+1}{3} = q$; or $p = 39 - 1$, and $x = 69 - 1$, also $\frac{x-3}{4} = \frac{69-1}{4}$, or $9 - 1 + \frac{29}{4} = wh$ or $\frac{29}{4} = wh$ or $\frac{q}{2} = r$; whence $q = 2r$, let $r = 1$, then $q = 2$, $p = 5$ and $x = 11$.

Again, by Master *H. Atkin*, Milk-Street Academy, Sheffield.

First $\frac{2x+1-2}{3}=\frac{2x-1}{3}=2$, or $2\times2+1=5$, and $2\times3=6$, therefore $\frac{6x+5-3}{4}=x+\frac{2x+2}{4}=1$; hence $x=6\times1+5=11$.

Again, by Master *Hamer*, Liverpool.

Put x for the number sought; then $\frac{x-1}{2}$, $\frac{x-2}{3}$ and $\frac{x-3}{4}$ are to be whole numbers; let m, n, and p be put for their respective values, then we have $x=2m+1=3n+2=4p+3$; $m=\frac{3n+1}{2}=2p+1$, and $n=\frac{4p+1}{3}$, where p may be taken at pleasure. If $p=2$ then $x=4p+3=11$.

Answers were also given by Master *Burnell* and Master *Stead*.

QUESTION 4.

Answered by Master *Bramall*.

Put $x^2=y$, and the equation becomes $y^3-6y^2-24y-27=0$; now by substituting successively the divisors of the last term, we find $y=9$, which is the only possible root the equation contains; hence, $x=3$.

Again, by Master *H. Atkin*.

Put $y=x^2$, and we have $y^3-6y^2-24y-27=0$; put $z+2=y$, then by substitution and reduction, $z^3-36z=91$, and, by Cardan's Rule, z is found $=7$, also $7+2=y=9$, and $x=3$.

This question was answered also by Master *Hamer*, Master *Stead*, Master *Wadsley*, Master *Nicholson*, Master *Burnell*, Master *W. Harrison*, Master *Macam*, and Master *Lamb*.—Master *Wadsley* is requested to accept of Bonnycastle's Algebra, and Master *H. Atkin* of any

Book he thinks proper, the price of which does not exceed four shillings.

Master *R. Nicholson* is the eldest of seven children of the late Mr. *R. Nicholson*, of Liverpool, whose premature death has robbed the sciences of one of their brightest ornaments. Memoirs of his life, by any gentleman who was acquainted with him, will be thankfully received by the Editors of the Enquirer.

PRIZE SUBJECTS

TO BE ANSWERED IN NO. VIII.

ARTICLE XIII.

Any young gentleman, under 16 years of age, who sends the best poetical translation of "Virgil's Fourth Eclogue," will be entitled to a prize.

ARTICLE XIV.

The best translation of the following piece, by young ladies or gentlemen not 16, will be entitled to a prize.

Dès le matin, on apporta Paul couché dans un palanquin. Il avoit repris l'usage de ses sens; mais il ne pouvoit proférer une parole. Son entrevue avec sa mère et madame de la Tour, que j'avois d'abord redoutée, produisit un meilleur effet que tous les soins que j'avois pris jusqu'alors. Un rayon de consolation parut sur le visage de ces deux malheureuses mères. Elles se mirent l'une et l'autre auprès de lui, le saisirent dans leurs bras, le baiserent, et leurs larmes qui avoient été suspendues jusqu'alors par l'excès de leur chagrin commencerènt à couler. Paul y mêla bientôt les siennes. La nature s'etant ainsi soulagée dans ces trois infortunés, un long assoupissement succéda à

l'état convulsif de leur douleur, et leur procura un repos lethargique semblable, à la vérité, à celui de la mort.

M. de la Bourdonaye m'envoya averitir sécretement, que le corps de Virginie avoit été apporté à la ville par son ordre, et que de-là, on alloit le transférer à l'église des Pamplemoussées. Je descendis aussi-tôt au Port Louis, où je trouvai des habitans de tous les quartiers rassemblés pour assister à ses funerailles comme si l'isle eût perdu en elle ce qu'elle avoit de plus cher. Dans le port, les vaisseaux avoient leurs vergues croisées, leurs pavillons en berne, et tiroient du canon par longs intervalles. Des grenadiers ouvroient la marche du convoi. Ils portoient leurs fusils baisses. Leurs tambours, couverts de longs crêpes, ne faisoient entendre que des sons lugbres, et on voyoit l'abattament peint dans les traits de ces guerriers, qui avoient tant de fois affronté la mort dans les combats, sans changer de visage. Huit jeunes demoiselles des plus considérables de l'isle vetues de blanc et tenant des palmes à la main, portoient le corps de leur vertueuse compagne couvért de fleurs. Un chœur de petis enfans le suivoit en chantant des hymnes: après eux venoit tout ce que l'isle avait de plus distingué dans ses habitans et dans son état-major, à la suite duquel marchoit le gouverneur, suivi de la foule du peuple. Voilà ce que l'administration avoit ordonne, pour rendre quelques honneurs à la vertu Virginie. Mais quand son corps fût arrivé au pied de cette montagne a la vue de ces mêmes cabanes dont elle avoit fait si long-temps le bonheur, et que sa mort remplissoit maintenant de désespoir; toute la pompe funèbre fût dérangée; les hymnes et les chantos cessèrent; on n'entendit plus dans la plaine que des soupirs et des sanglots. On vit accourir alors des troupes de jeunes filles des habitations voisines pour faire toucher au cerceuil de Virginie des mouchoirs, des chapelets et des couronnes de fleurs, en l'invoquant comme une Sainte. Les mères demandoient à Dieu une fille comme elle; les garçons, des amantes aussi constantes; les pauvres, une amie aussi tendre; les esclaves, une maitresse aussi bonne.

Lorsqu'elle fut arrivée au lieu de sa sépulture, des négresses de Madagascar et des Caffres de Mosambique, déposèrent autour d'elle des paniers de fruits, et suspendirent des pièces d'etoffes aux arbres voisins, suivant l'usage de leur pays. Des Indiennes du Bengale et de la côte Malabare, apportèrent des cages pleines d'oiseaux, auxquels elles donnèrent la liberté sur son corps; tant la perte d'un objet aimable intéresse toutes les nations, et tant est grand le pouvoir de la vertu malheureuse puisqu'elle réunit toutes les religions autour de son tombeau !

ARTICLE XV.

The best Theme or Essay, *on any subject*, by young ladies or gentlemen under 16 years of age, will be entitled to a PRIZE.

ARTICLE XVI.

The best copy of English Verses, *on any subject*, by young ladies or gentlemen, not 16 years old, will be entitled to a PRIZE.

ARTICLE XVII.

QUESTION 1. By ——— ———.

What will *6d.* amount to in 60 years, at *5* per cent. compound interest?

QUESTION 2. By ——— ———.

My well is 70 yards deep, and 9 feet diameter, what did it cost me sinking, at $1\frac{1}{4}$*d.* the solid foot?

QUESTION 3. By Master Macann, Lutton.

A gentleman wants to lay out $3\frac{1}{2}$ acres of land in a shrubbery, in the form of a regular pentagon; please to tell his gardener the length of one side.

QUESTION 4. By Master S. Stead, Farnley.

What will the expense of fencing a rectangular field come to at 11¾*d.* per rood, the diagonal being 50, and the perpendicular let fall thereon from either of the opposite angles, 24 chains?

Miscellaneous Correspondence,

&c.

A SURVEY OF ROMAN ANTIQUITIES

IN THE

COUNTY OF LINCOLN.

(*Continued from vol.* ii. *p.* 135.)

"IN 1782 was found, under the yard of Mr. Laycock's house, adjoining to the King's Arms Inn, another souterain, which, from all appearance, one may fairly conclude to be a sudatory. On a floor composed of two courses of brick, and two layers of terrass mortar, of sand, lime, and pounded bricks, and the upper course drawn over again with terrass, stood a number of arches, four feet thick, their crown 8½ inches thick, supported by pillars, formed by brick, 16 inches by 12, and 1½ thick, which, as well as the arches, were drawn over with coats of mortar or terrass, and supported a floor composed of terrass bricks, in an irregular manner. The intervals between the pillars were, 2 feet 3 inches, 2 feet 5 inches, 2 feet 7 inches, and several of the pillars were gone, only the foundations remaining.

"North beyond two rows of these pillars, whose floors rise 1½ inches from south to north, were passages: at the end of which the arches began again, and were, perhaps, equal in number to the other; but the discovery was pursued no further that way, for the external wall (which is 6 feet thick of brick and stone intermixed) extends northward beyond the width of one arch, but how much further cannot be traced, the arches being broken in and filled with rubbish to the surface of the ground. Where this second set of arches begins, was a hole that goes sloping up into the outer wall, and begins at the crown of the arches.

"It seems to have communicated with some place above. By some joints in the work, it appears as though the place with the pillars, or the passages which joined to them, had been built one before the other. On the south was an entrance or outlet, whose floor falls 5 inches, and is continued beyond the jamb. The surface of the floor is 13 feet 6 inches below the pavement of the street, and 17 feet 5 inches below the garden, under which it is situate. A great number of fragments of urns, pateræ, and other earthen vessels, were brought out from the rubbish, but none remarkable for their ornamenting; also several earthen bottles, which appeared to have no orifice, and terminated in a point. The external walls were built of stone intermixed with brick, &c.

"These are the only hypocausts or sudatories of which any account has been preserved, but it is probable many others have been discovered which, either from ignorance or want of taste, have been destroyed, or suffered again to sink into that obscurity from which chance had half rescued them."

Sepulchral remains. Every thing connected with ancient Rome, however mean and trifling in itself, derives from that connection dignity and importance. The man who can contemplate without emotion, an inscription, tile, or even Roman denier, I should accuse of want of taste or feeling. Their sepulchral remains in particular are worthy our strictest attention; and in Lindum they have met with a better fate than other relics of this people. The pens of a Pownall, a Sympson, and ("though last not least") a Carter, have been employed in the praiseworthy task of rescuing them from oblivion, and transmitting accounts of their discoveries for the edification of posterity.

Under this head the discoveries are numerous, and the "urns, coins, and other memorials therein deposited, have been transplanted to the Minster Library, or else introduced into the private cabinets of distinguished literati. So plentiful, indeed, have these vestiges been, that scarcely a hill has been levelled, or a trench dug in the environs of the city, without some being turned up."

In the stone quarries, about a mile east from the cathedral, great numbers of bones have been dug up, ever since the ground was first opened for stone, though few have been taken up entire. Here, I conjecture, was the chief burial place of the colony. Out of a urn dug up in 1736, Mr. Sympson got a fair coin of Adrian, of the second magnitude; the head laureate HADRIANVS AVGVSTVS, P. P.; reverse, a figure standing, a palm branch and cornucopiæ, FELICITAS AVG. S. C. These urns generally contain, besides bones and ashes, a piece of copper money. There are also abundance dug up that have been buried without burning, after the custom ceased, as may be supposed, among the Romans. Some of these have had prodigious strong coffins, as may be judged from the iron cramps and nails six, seven, eight, and nine inches long, which have been found among the bones, with some small remains of wood, not quite consumed after so many ages.

On Friday, May 14, 1731, some labourers digging for stone in this quarry discovered, lying north and south, the head to the north, about 1½ or 2 feet below the surface, two ancient sepulchres, composed each of four large stones, set edgeways, for the ends and sides, and covered with a fifth; about 6 feet long, within the breadth 3 feet, the depth 2½ feet; the cover of one of them was in two pieces. The bodies had been inclosed in thick strong wooden coffins, of which nothing remained save a small matter that stuck to the huge iron spikes and cramps, that had bound the planks together, and that was so much decayed, that the sort of wood was not to be distinguished. In the north end lay a very thick scull (the teeth gone), and some pieces of thigh bones, and many iron spikes, full 6 inches long, thick as the little finger, but consumed by rust,

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and broken at the ends. On the right side of the coffin towards the head, was a beautiful urn of fine red clay, broken among the nails and mouldy earth, with a little scroll or festoon round it; it was five inches deep, and might have held a quart. Near a yard south from the foot of the tomb, and at the same depth, was a heap of black strong smelling ashes. Next day they found a similar stone coffin, the cover of one stone, and the inside of each side stone, hewn smooth, not so long as the other, and in it only a piece of scull and bones. Many bones have been dug up in different parts of the hill, as if thrown in from a field of battle; and in this quarry was found the brass armilla mentioned by Dr. Stukeley, as in the possession of Mr. Pownall.

John Pownall, Esq.* describes an ancient place of sepulture, discovered in an open field, half a mile due east of the east-gate of the ancient Lindum. This was in 1790. It was evidently a sepulchral monument of the Romans, and of some person above the rank of the lower order; but as the urn, which the sarcophagus inclosed, contained nothing but sand, ashes, and burnt bones, the era of interment could not be ascertained. The sarcophagus consisted of a large round stone trough, of rude workmanship, with a cover of the same; both the stone and its cover had originally been square, but the ravages of time had so worn off the angles, as to give it the appearance of rotundity. Another stone of the same kind was found near it, of a quadrangular shape, evidently used for the same purpose, but without a lid or urn.

This, with many rare fragments of antiquity, were preserved by the Rev. Dr. Gordon, the Precentor of the Cathedral; who, in a letter to Mr. Pownall, dated March 2, 1791, gives an account of several *earthen and glass urns*, which were discovered in the same field, some of which were of singular shape. He also describes a room, 20 feet by 16, which was discovered in a quarry, about one hundred yards west from the other; the height could not be ascertained, but the bottom was about 12 feet from the present surface. The floor was covered with black ashes, and the walls bore evident marks of fire. Two skeletons were found lying on the floor, also a large stone trough, capable of holding a man, but not of sufficient depth for the purpose of a coffin. This was probably a sarcophagus, in which, as Pliny[*] informs us, that all bodies, previous to urn burial, were accustomed to be burnt. The Doctor thinks the room might have been appropriated for the reception of bodies that were prepared for the funeral ceremonies. Suetonius in Nerone, and some other writers, have described similar places under the name of *Libitina*: where dead bodies were carried previous to interment. "Erat porro, Romæ porta *Libitina* per quam cadavera ad *Libitinam* efferebantur[†]."

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* Vide Archæologia, Vol. X.

Bourn, June 19, 1812. M.

(To be continued.)

HENRY VIth's DIRECTIONS

FOR THE

BUILDING KING's COLLEGE, CAMBRIDGE.

Annexed is a copy of the instructions given by Henry VIth for the building of King's College, Cambridge, which I have transcribed from a manuscript copy of the same; and which I trust will be acceptable to the Readers of the Enquirer.

Many of the expressions are obsolete and unintelligible to modern readers;—if any of your correspondents would take the trouble of explaining these in a future number, it would be acceptable.

PYTHON.

As touching the dimensions of the church of my said colledge, of our Ladie and Saint Nicholas of Cambridge,

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[*] Pliny's Natural History, Lib. II.

[†] Lazeico Comme. Reipub. Rom. Vide Beauties of England and Wales, Vol. IX.; and Jewitt's History of Lincoln, pages 228—231, and pages 235—237; also the Archæologia, and Gough's Camden, Vol. II. Edit. 1806.

I have devised and appointed, that, the same church shall contain in length 288 foote of assise, without any iles, and all of the widenesse of fortie foote. And the length of the same church, from the west ende unto the altars at the quire doore, shall containe 120 foote. And from the provosts stall, unto the *greece* called Gradus Chori, 90 foote for 36 stals on either side of the same quire, aunswering to 70 fellowes, and ten priests conduits, which must be *de prima forma*. And from the saide stals unto the east ende of the saide church. 62 foote of assize. Also a *reredosse* bearing the *roodloft*, departing the quire and the body of the churche, containing in length fortie foote, and in breadth fourteene foote. The wals of the same church to bee in height ninety foote imbatteled, vauted and *charerоofed*, sufficiently butteraced, and every butterace *fined with finials*. And in the east ende of the same church shall be a *window of nine dayes*, and betwixt every butterace a *window of five dayes*. And betwixt every of the same butteraces in the body of the church, on both sides of the same church, a closet with an alter therein, contayning in length twentie foote, and in bredth tenne foote, vawted and finished under soyle of the ile windows. And the pavement of the church to be entranced foure foote above the ground without. And the height of the pavement of the quire one foote and an halfe above the pavement of the church. And the height of the pavement of the alter three foote above that. And on the north side of the quire a vestrie, contayning in length fiftie foote, and in bredth twentie-two foote, departed into *two houses* beneath, and *two houses* above, which shal containe in height twentie-two foote in all, with an entrie from the quire vauted. And at the west ende of the church a cloyster square, the east *pane* contayning in length 175 foote, and the west *pane* as much. The north *pane* 200 foote, and the south *pane* as much, of which the *deambulatorie* thirteene foote wide, and in height twentie foote, to the *corbill table*, with cleare stories and butteraces with *finiales*, vauted and embattelled. And the grounde thereof, foure foote lower than the church ground. And in the middle of the west *pane* of the cloyster, a strong tower square, contayning foure and twentie foote within the wales. And in height 120 foote to the *corbill* table. And foure small turrets over that *fined* with pynacles. And a doore into the sayde cloyster inwards, but outwards none. And as touching the dimensions of the *housing* of the sayde colledge, I have devised and appoynted in the south side of the sayde church, a quadrauut, closing to both endes of the same church, the east *pane* whereof shall contain two hundred and thirtie foote in length, and in breadth within the wales, two and twentie foote. In the same *panes* middle a tower for a gatehouse, contayning in length thirtie foote, and in breadth two and twentie, and in height fortie foote, with three chambers over the gate, every one over the other. And on either side of the same gate foure chambers, every one contayning in length five and twentie foote, and in breadth two and twentie foote. And over every of these chambers, two chambers above of the same measure, or more, with two towers outward, and two towers inward.

The south *pane* shall contain in length 238 foote, and in breadth two and twentie foote within, in which shal be seven chambers, every one contayning in length nine and twentie foote, and in breadth two and twentie foote, with a chamber parcell of the provoste's lodging, contayning, in length five and thirtie foote, and with a chamber in the easte corner of the same *pane*, contayning in length five and twentie foote, and in breadth two and thirtie foote. And over every of all these chambers, two chambers, and with five towers outward, and three towers inward. The west *pane* shall contayne in length 230 foote, and in breadth within 24 foote, in which at the ende toward the church, shall be a librarie, contayning in length 110 foote, and in breadth foure and twentie foote. And under it a large house for reading and disputations, contayning in length fourtie foote. And two chambers under the same librarie, each contayning nine and twentie foote in length, and in breadth foure and twentie foote. And over the sayd librarie a house of the same largeness for divers stuffe of the said colledge. In the other end of the same *pane* a hall, contayning in length 100 foote, upon a vault of twelve foote high, ordained for the cellar and buttrie;

and the breadth of the hall sixe and thirtie foote, on every side thereof a *bay* window. And in the neather end of the same hall, toward the middle of the same *pane*, a pantrie and buttrie, every of them in length twentie foote, and in breadth seventeene foote, and over that two chambers for officers. And at the neather end of the hall towards the west, a goodly kitchin. And the same *pane* shall have inwards two towers, ordained for the waies into the hall and librarie. And in every corner of the said *quadraunt* shall be two corner towers, one inward and one outward, more than the towers above rehearsed. And at the upper end of the hall the provost's lodging, that is to wit, more than the chambers for him above specified, a parlour on the ground, contayning foure and thirtie foote in length, and two and twentie foot in breadth, and two chambers above of the same quantitie. And westward closing thereto, a kitchin for him, a larder house, stables, and other necessary housings and groundes. And westward beyond these houses, and the said kitchin ordayned for the hall, a bakehouse, a brewhouse, and other houses of office, betweene which there is left a ground square of fourescore foote in every *pane*, for wood and suche stuffe. And in the middle the said large quadrant shall be a conduit, goodly devised for ease of the same colledge. And I will, that the edification proceede in large forme of my saide colledge cleane and substantiall, setting aside superfluitie of too great curious workes of *entaile* and busie moulding. And I have devised and appointed that the precinct of my sayd colledge, as well on both sides of the garden from the colledge to the water; as in all other places of the same precinct, to be inclosed with a substantial wall, of the height of foureteene foote. With a large tower att the principall entrie against the middle of the east *pane* out of the high streete. And in the same tower a large gate, and another tower in the middle of the west end at the newe bridge. And the same wall to be crested, embattelled, and fortified with towers, as many as shall bee thought convenient thereto. And I will, that my sayd colledge be edified of the most substantiall and best abiding stuffe, of stone, lead, glasse, and yron, that may best be hadde and provided thereunto.

A. D. 1440.

BIBLIOGRAPHICAL AND LITERARY ANECDOTES.

No. III.

'*A Letter to the Rev. Mr. Douglas, occasioned by his Vindication of Milton, by William Lauder, M. A.*' 4to. 1751.

This was the recantation of Lauder, a Scotchman of considerable ingenuity, who, through the medium of the Gentleman's Magazine, pretended to fix on Milton the charge of plagiarism from several modern and obscure Latin poets, and which he afterwards embodied and published in an octavo volume, and to which I have sometimes seen prefixed the apology of the publishers for having been instrumental in promulgating so flagrant a forgery. Lauder, in furtherance of his design, purloined (as he thought without danger) all that was necessary for his purpose from *Maserius*, *Staphorstius*, *Valmarana*, *Catsius*, and *Taubmannus*, and interpolated the passages, which he extracted from these authors with entire lines, either translated by himself from the '*Paradise Lost*,' or literally taken from Hogg's version of this poem. The same year, a defence appeared from the pen of Mr. Richardson of Clare Hall, entitled "*Zoilomastix, or a Defence of Milton;*" but the total discomfiture of the virulent impostor was reserved for Dr. Douglas, afterwards Bishop of Salisbury, who, towards the close of the year 1750, published a letter addressed to the Earl of Bath, and entitled "Milton vindicated from the Charge of Plagiarism brought against him by Mr. Lauder." Johnson, who had espoused the cause of Lauder, on finding his iniquity, compelled him, though reluctantly, to publish an ample confession of his guilt, which he took care to draw up for him, and which was published in 1751, as before mentioned.

History of Reynard the Fox.

Dr. Drake, in his preface to the "Secret Memoirs of Dudley, Earl of Leicester *," says, that this Book, though read by few except old women and children †, is supposed by persons of greater judgment to be an enigmatical history of the Earl of Leicester and his family; and, says he, by comparing the history of Reynard the Fox with these memoirs, this conjecture will not appear fallacious, many circumstances exactly tallying. The exploits of Leicester are shadowed under the feigned adventures and intrigues of brutes, the author not daring to write his history plainly, fearful perhaps of the power of Leicester.

Cartes des Chasses; or, Maps of the Royal Hunts or Forests of France.

These maps form the most beautiful and singular monument of the kind which has ever appeared in any country. It is said that the engraving of each map cost 400 louisd'or. For each department, wood, water, hills, fields, &c. &c. a separate engraver, eminent in his particular line, was employed. Of twelve designed, only eight were finished before the subversion of the French monarchy. These cartes not being designed for sale, but as presents to favoured individuals, the possession of a copy cannot easily be obtained. The remaining *four* are said to be now proceeding with ‡.

Drelincourt's Discourse on Death. 8vo.

This is a book of great credit among vulgar enthusiasts; but, when he first published it, he was so totally disappointed in its sale, that he complained to Daniel Defoe, the author of Robinson Crusoe, &c. of the injury he was likely to sustain by it. Daniel asked him if he had blended any thing marvellous with his pious advice; he said he had not. If you wish to have your book sell, said Daniel, I will put you in the way; he then sat down and wrote the story of the Apparition, which is to be found at the end of Drelincourt's work, and which is alledged, as a proof of the appearance of ghosts, to be as authentic as the affair of the Witch of Endor *.

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* This is not what Drake would have us believe from his preface, a copy from an original MS. but a mere reprint from Father Parsons's famous libel against the Earl of Leicester in Queen Elizabeth's time, entitled 'Leicester's Commonwealth.'

† However it might have been in Dr. Drake's time, its price and scarcity, I should conjecture, must prevent its falling into the hands of many of that class of the present day.

‡ Pinkerton.

Wood's (Anthony) Athenæ Oxoniensis; or, Lives of Persons educated at Oxford, from A. D. 1500.—*2 vols. Folio.* 1691 *and* 2.

Anthony Wood stands prominent as one of the class of laborious compilers who may not inaptly be termed "Biographical Pioneers;" and to him it is that we are indebted for this catalogue of near one thousand native authors; and which, notwithstanding the charges of narrow-mindedness and furious prejudices brought against the author, continues to receive the approbation of, and to be the model for, every writer in that department of literature; and it would be well if the authors and compilers of the present day were to imitate the honest bluntness of Anthony as well as his plan, and play praise a little less into each others hands, by judging candidly, and speaking impartially what they think; but I am afraid few are inclined, like him, to sacrifice every thing for the love of truth: and if they value personal convenience, they perhaps are right, for Wood having accused the Chancellor, Edward Earl of Clarendon, of bribery and corruption, the University condemned the book to be burnt in the theatre yard, and expelled the author as a disturber of the peace, besides fining him thirty-four pounds.

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* Rede's Anecdotes 8vo. p. 124.

Milton's Paradise Lost.

The following is an abridged account of what Mr. Todd relates in the first volume of his edition of our Poet's Works:

Milton experienced some difficulty in getting his poem licensed, the licenser imagining that, in the noble simile of the sun in an eclipse, he had discovered treason. It was, however, licensed, and Milton sold his MS. to Samuel Simmons, April 27th, 1667, for an immediate payment of five pounds, with a proviso, that on 1300 copies being sold, he was to receive five pounds more; and the same for the second and third editions.

The first edition appeared in 1667, in ten books small 4to. advertised at 3*s.* plainly bound; but as it met a very quick sale, the titles were varied in order to promote its circulation—thus the edition of 1667 is frequently found with the titles of 1688 and 1689.

In two years the sale gave the poet a right to his second payment, the receipt for which was signed April 26th, 1669.—The second edition was printed 8vo. 1674, but he did not live to receive the stipulated payment.—The third edition was published 1678; the copyright then devolving to his widow, she agreed with Simmons to receive eight pounds for it; this agreement was concluded, and the receipt signed, Dec. 21st, 1680. Simmons transferred the right for twenty-five pounds, to a bookseller named Brabazon Aylmer, and Aylmer sold half to Jacob Tonson, August 17th, 1683, and the other half at a price considerably advanced, March 24th, 1690.

Dr. Bentley received for editing Milton, in 1732, one hundred and five pounds; and Dr. Newton, for his edition of Paradise Lost, received six hundred and thirty pounds; and for Paradise Regained, one hundred and five pounds.

Paul Sarpi's History of the Council of Trent.

A better illustration of an old adage could not be well selected than the following: Dr. Samuel Johnson proposed to translate the work, which stands as the head-piece to this article, from the French version of Le Courayer; and twelve quarto sheets were completed and printed, for which he received from Cave, the projector of the Gentleman's Magazine*, forty-nine pounds, seven shillings; when the design was given up, in consequence of a singular rivalship, for a Mr. Samuel Johnson, librarian and curate of St. Martin's in the Fields, having engaged in the same laborious undertaking, under the patronage of Dr. Zachary Pearce and the clergy, the interest exerted for the rival versions proved destructive to both; and, after some skirmishing between the two translators, the attempt was mutually relinquished.

Sallust.

"Nearly thirty years ago, the president de Brosses, a distinguished philologist of France, finding in the course of his researches some remains of a History of the Roman Republic, by Sallust, which had been supposed to be entirely lost, undertook the arduous task of restoring it. After taking immense pains to collect all the quotations which had been made from this precious relic by the ancient grammarians and others, he found himself in possession of more than seven hundred fragments, which he laid together with so much skill and patience, as to produce a connected work, by no means unworthy of the celebrated Roman whose name it bears. This work was translated into French, and published in 1777 at Dijon, in three volumes quarto, under the following title: "Histoire de la Republique Romaine dans le cours due 7me. Siecle par Salluste," &c.

MILLER'S RETROSPECT.

Old Tobit; a Stage Play from the Old Testament.

Acted at Broadgate, Lincoln, in the 6th year of Queen Elizabeth. The following curious list of scenes has been communicated by some one of its correspondents to the Gentleman's Magazine.

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* This Magazine commenced in 1731, and as it was the first attempt at a publication of the kind, has continued to maintain its character, as the best, during the lapse of nearly a century.

List of Scenes lying at Mr. Norton's house, in tenure of William Smart.

1st — Hell-mouth, with a nether chap.
Item. A Prison with a covering.
Item. Sarah's Chamber.

Remaining in St. Swithin's Church.

Item. A great Idol with a club.
Item. A Tomb with a covering.
Item. The City of Jerusalem, with towers and pinnacles.
Item. The City of Nynevah.
Item. Old Tobye's House.
Item. The Israelites' House, and the Neighbour's House.
Item. The King's Palace at Laches.
Item. A Firmament: with a fiery Cloud, and a double Cloud,—to the custody of Thomas Fulbeck, Alderman.

Le Poëte sans fard, ou discours satyriques sur toutes sortes de sujets (par Gacon).—2 vols. 12mo. 1696.

This work, which was reprinted in 1701 with some alterations, is a collection of satires, which Chancellor Boucherat caused to be suppressed, and condemned the author to some month's imprisonment. François Gacon died in 1725, at the age of fifty, after having composed a great number of very indifferent satirical works. The following quatrain from the *Poëte sans fard*, may be considered no very unfavourable specimen of the author's talents.

Une beauté, quand elle avance en age,
A ses amans inspire du dégoût;
Mais, pour le vin, il a cet avantage,
Plus il viellit, plus il flatte le goût.

Which may be '*done into English*', thus :—

A beauty when advanced in age,
In lover's eyes sees little favour;
But wine it is has this advantage,
The older 'tis, the finer is its flavour.

Sancti Hieronymi Expositio in symbolum Apostolorum.
4to.—Oxford, 1478.

This work, which I have before mentioned at page 35, is of very rare occurrence, but a copy of it made its appearance at King and Lochée's Auction Room, about two months since, when it fetched the *moderate sum* of ninety-one guineas.

METHOD OF PREVENTING OR CURING THE DAMP IN HOUSES.

MESSRS. EDITORS,

THE best use of philosophy consists in the application of scientific discoveries to improve and ameliorate the condition of mankind; this is my sole reason for troubling you with the following remarks, on a subject which I believe you will agree with me in thinking of considerable importance, at least to a large portion of society.

Not far from this place * two females died in the same week, in two contiguous houses, in consequence of such houses being damp. Consumptions have been styled the plague of Britain. Dr. Pearson says (see Nicholson's Journal, vol. xxv. p. 217), from one hundred and twenty to one hundred and forty thousand subjects of the United Kingdom are annually cut off by pulmonary tubercles. No doubt the same cause must produce somewhat similar effects in other countries, allowance being made for difference of climate, &c. Damp houses, by suddenly checking perspiration, contribute in no small degree to the production of hectic and other fevers, which frequently terminate in death.

* See the Leeds' Mercury, Jan. 27, 1810, p. 3, col. 1.

—(See Nicholson's Journal, vol. xv. p. 104.) Persons with the strongest constitutions, who, after being heated, sit to cool or sleep in such houses, may often from such circumstances date the commencement of these complaints, what then must be the effect on the delicate female in such a situation?

It will often happen, that dwelling-houses must be erected where it will be physically impossible for every part to be dry, or free from damp, unless a proper method be adopted to secure that desirable object: such method has not come within the sphere of my scanty observation. The *best* I have seen is, to remove part of the back-ground (where the house is built on the side of a hill) level with the foundation. But this expensive operation is insufficient, for the stagnant air in the area so sunk holds much water in solution, which will of course saturate the outer walls and adjoining rooms with moisture.

The method of prevention, or cure, which I beg leave to propose, is as follows. In case where the damp proceeds from one or more walls, or sides of the house, being built against the side of a hill, &c. let a narrow inner wall, air-tight, be carried up parallel with the outer damp wall, and at a small distance from it (such inner wall being continued above, and beyond the effect of the damp) air-holes must be left through the outer-wall into the top of the enclosed space; and from the bottom of such space in the middle of its breadth a metallic pipe, or any kind of flue, is to be carried under any convenient part of the ground-floor, to terminate in the kitchen or principal fire-place. The air in the mouth of the flue, or tube, being rarefied by the fire, a constant stream will issue from the atmosphere through the apertures, space, and flue, which will completely carry off the damp, and in addition greatly increase the draft of air up the chimney.

But if the damp proceed from the ground on which the house is built being a humid flat, it will be necessary to make the ground-floor double with an apparatus as described above. And where there are drains of running water, a current of air must by the same means be carried over them to the fire, observing to make the current of air a little wider than that of the water below.

Crosland near Huddersfield. MICHAEL HARRISON.

The above is also the best method of preventing the dry-rot in buildings which I have ever met with, and very much exceeds in efficacy the process recommended by Dr. Parry (see Enquirer, vol. i. p. 109, *et seq.*) I had perfected my method, and communicated it to several friends, fifteen months before I saw Dr. Parry's. M. H.

ON VEGETABLE INSTINCT AND THE SLEEP AND SENSATION OF PLANTS.

BY MR. TUPPER.

INSTINCT is a particular disposition or tendency, in a living being, to embrace without deliberation or reflection the means of self-preservation, and to perform, on particular occasions, such other actions as are required by its economy, without having any perception for what end or purposes it acts, or any idea of the utility or advantages of its own operation.

Hence the difference between *instinct* and *volitions*; for we cannot reasonably refer to *volition* those particular actions for which animals have occasion, and which they spontaneously perform, even before they can have experienced those sensations upon which the motive for action might be supposed to be founded. Of this class of actions is that of sucking; and it is very probable, that many other operations of animals which seem to be the result of *volition* are merely *instinctive*; otherwise we must, in many instances, ascribe them to a degree of intelligence and sagacity even superior to that of the human species, at least in that which relates more immediately to their necessities and welfare.

An intelligent being has for the most part some motive in view for the performance of any particular operation; and he is thereby enabled to act in a way *simi-*

lar to others, or *differently* from them, according to the object he may *will* or *intend* to accomplish. His power of action is varied almost infinitely; but with respect to irrational beings it is different. Each of these is distinguished by a certain character, which not only denotes its species, but also in a great degree marks the nature of its abilities; and therefore, in comparing the attributes of the different orders of animals, we shall find, that whatever degree of intelligence may appear to be displayed by their actions, such actions always bear some relation to the particular organization of their frame. We cannot therefore make an animal perform any work of art which is not related more or less to its natural habits; or, in other words, we cannot endue it with instincts which are foreign to its economy, unless we could at the same time new model the mechanism of its frame, and fit it accordingly for some new purposes.

The ingenuity displayed by the feathered tribe in the building of their nests, and the art and address exhibited by the spider in the weaving of its web, cannot fail to call forth the admiration of the observer. But the skill which these and many other animals exhibit, cannot be applied, even by the most sagacious of them, to purposes beyond the sphere of their particular wants. These wants are similar in every animal of the same species, and each exerts itself like the other for the purpose of providing for them, without the aid of instruction or experience. Hence, although we perceive that some particular purpose is intended by the performance of many of the actions of vegetables, as well as by those of animals, yet the intention is not in the agents themselves, but in that superintending Providence who has ordained their existence.

After these general observations, we are better prepared to consider some of those actions of vegetables which are founded upon their instinct; and a very familiar instance of motion in them, indicative of that attribute, is manifested by their universal aptitude to incline towards the light, which is so essentially necessary to their health and well being. This disposition is so great, that a plant will even twist its stem, and change the orgiual direction of its branches and leaves in order to get towards it *.

Some naturalists, however, ascribe these effects to the mechanical operation of light; but the evident benefit which a plant derives in consequence of those particular actions, as well as the circumstances attending these, render it most probable that they are the *spontaneous exertion* of that being to avoid what is prejudicial, and to obtain that which is more salutary to its nature; thereby, like animals, contributing to its own welfare and preservation.

If this *self-inclination* of a plant towards the light were the effect of the mechanical action of that element, it is reasonable to suppose that a mechanical cause, operating on a plant so *powerfully* as to make it change the original direction of its branches and leaves, would necessarily act with more or less force: and as, moreover, that force is *continually* acting during the day, we should also be led to expect that, like other mechanical stimuli *frequently repeated,* or *long continued,* it would tend to exhaust, or at least to weaken, the living powers of a plant exposed to its influence, and that more particularly at a time when from a state of *debility* it is *less* capable of resisting the *exhausting* effects of exciting causes. But so far from occasioning any deleterious consequences, we find that *light* will very essentially contribute in bringing a plant from a *weak* and *languid* condition to a state of *health* and *vigour.*

Climbing plants also afford a curious instance of instinctive economy. Some of these having very slender stems cannot, like most other plants, grow of themselves in a perpendicular direction; but, in order to compensate for this incapacity, nature has given them the power of moving or turning their branches and tendrils different ways, until they generally meet with a tree or some other body on which to climb or attach themselves, and when a tendril has laid hold of a support, it coils up and draws the stem after it.

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* It is also a remarkable and very curious fact, that even "plants in a hot-house all present the fronts of the leaves to the light; and this influences even the posture of the branches to the side where there is most light, but neither to the quarter where there is most air admitted, nor to the flue in search of heat," *Vide* SMITH's "Introduction to Botany."

Trees and other vegetables have likewise the power of directing their roots for procuring nourishment; and if this does not indicate an instinctive selection of food, it is at least something very analogous to it. For instance, a tree growing near a ditch will be found to direct its roots straight downwards, on the side next the ditch, until they reach the ground below it, when they will throw off the fibres underneath, and ramify like the root on the other side of the tree. Some curious examples of this kind of instinct are related by Lord Kames, among which is the following: "A quantity of fine compost for flowers happened to be laid at the foot of a full-grown elm, where it lay neglected three or four years; when moved in order to be carried off, a network of elm fibres spread through the whole heap; and no fibres had before appeared at the surface of the ground."

Many flowers also fold up their leaves on the approach of rain, or in cloudy weather, and unfold them again when cheered by the re-animating influence of the sun. This is remarkably exemplified in the *Convulvulus arvensis*, *Anagallis arvensis*, and many others, but more particularly in the last, whence it has been called the poor man's weather-glass. In Watson's Chymical Essays, also it is stated that "*trefoil*, *wood-sorrel*, *mountain-ebony*, the *African marigold* *, and many others, are so regular in folding up their leaves before rainy weather, that these motions have been considered as a kind of instinct similar to that of ants."

Aquatic plants also furnish some curious examples of spontaneous motion strongly characteristic of instinct. Among these, the *water-lily* affords a very remarkable instance, and that connected with the reproduction of its species. This plant bears its flowers upon a foot-stalk under water, and when the flowering season arrives, the stalk rises perpendicularly without any regard to the stream, until the flowers reach above the surface of the water. At this time some of them expand, and then the antheræ discharge their fecundating dust upon the stigma. About four o'clock in the afternoon the expanded flowers close, and the foot-stalk lies down either upon or under the water. It is erected every day until the flower has been completely impregnated, when it once more sinks under water, and there remains to ripen its seeds, which, at a proper time, escape from the fruit, and give birth to new individuals.

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* This refers to the petals, not leaves, of *Calendulæ pluvialis*.

This is asserted by Linnæus and various other naturalists; and, though controverted by some, has been recently confirmed by the observations of Dr. Smith, who authorizes me to make use of his name on this occasion. In cold or shady weather this phenomenon is less evident, and is explained by the writer last named as entirely owing to the stimulus of light. But yet, I presume, it is also in part referable to instinct, and that light operates only as an auxiliary to that phenomenon.

Besides the above examples of spontaneous motion in vegetables, there are other instances of it which take place on such particular occasions, as strongly indicate the presence of sensation in this class of beings; and if they are endued with any degree of it, may we not very consistently suppose that they are also capable of instinctive actions? These instances of motion are observed towards evening, and during the night, when plants are supposed to have also their season of *sleep*; and the external character of many of them appears so changed at the time, that it is often difficult to recognize their species. In some plants the leaves hang down by the side of the stem; in others, they rise and embrace it, and in some they are disposed in such a way as to conceal all the parts of fructification.

Motions of a similar kind also take place in the flowers. Some of these during the night fold themselves up in their calices; some only close their petals, while others incline their mouth or opening towards the ground. The mode of sleep varies, therefore, in different species of plants; and in consequence of this alteration of position in the flowers as well as the leaves, the young and tender stems, buds, fruits, &c.

are sheltered from the injurious effects of rain or dews, and the cold nocturnal air.

The propriety of applying the term *sleep* to these phenomena may, however, be disputed; and the occurrence of them ascribed to the absence of the stimulus of light. But although this may have some share in producing these effects, yet it can only act as a partial cause, which indeed operates in a very similar manner on animals; for the absence of light is also favourable to *their sleep,* and this fact seems to point out the analogy between *sleep,* strictly so called, and the effects which take place in plants, under the circumstances above mentioned.

However, leaving it to abler physiologists to decide on the propriety of the term, it is at all events very evident that an interval of rest is as necessary to the health and vigour of the vegetable, as it is to that of the animal.

Many other examples of *instinctive* and *spontaneous motion* in vegetables might be adduced; but it is not necessary to particularize more in this place, as the instances already noticed are fully sufficient to show that plants have the power of *self-motion;* and as they contribute thereby to their well-being, it is reasonable to conclude that they are, like animals, also capable of instinctive actions: and if *instinct* is the consequence or the necessary adjunct of sensation in *the one,* it is more than probable it is so likewise in *the other.*

Indeed, it is supposed by Darwin that they even possess *voluntary* power; and this he infers from their "*being subject to sleep.*" He says "that as the *sleep of animals* consists in the *suspension of voluntary motion,* and as *vegetables* are likewise *subject to sleep,*—there is reason to conclude that the various acts of opening and closing their petals and foliage may be justly ascribed to a *voluntary* power; for without the faculty of *volition, sleep* would not have been necessary to them *.

The several phenomena which have been noticed on this curious subject, do certainly afford some ground for supposing that *sleep* is more or less necessary to the

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* Vide DARWIN's Zoonomia; also Botanic Garden—Note on *Chunda.*

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welfare of vegetables, as well as to that of animals. But although there is in this state "a *suspension* of *voluntary motion*," at least in those animals which are endued with this *power*, yet it does not necessarily follow that *sleep* is a criterion of its existence, for *volition* is an attribute of *mind*, associated with a degree of rationality, which, in most animals, is compensated for by that *instinctive power* which I have before endeavoured to show is distinct from *volition:* I do not apprehend, therefore, that *sleep* is necessarily indicative of the existence of a *voluntary* power, although it may be so of a *sensitive* one.

When we speak of a living animal, we naturally associate the idea of sensation with that of its existence; but this does not, at the same time, give us any notion of the particular nature of the pleasure or pain of which the animal is susceptible. The same impressions will create very different sensations in animals of different species; and this difference will probably be still greater between those animals which inhabit different elements. Some of each class are furnished with similar organs of sense; which organs appear to be constructed on the same plan in the individuals of each element; but yet we shall find a peculiarity of structure adapted to the economy of the species: and that peculiarity of structure, as well as the different nature of the element in which they exist, must consequently occasion a difference in their respective sensations. Hence, as vegetables are necessarily so different from animals, in their mode of existence, it is very evident that we cannot form any idea how they feel affected under any circumstances; but we are not on that account to conclude that they are destitute of every kind of sensation. "As they possess *life, irritability,* and *motion*, spontaneously directing their organs to what is natural and beneficial to them, and flourishing according to their success in satisfying their wants—may not the exercise of their vital functions be attended with some degree of sensation, however low, and some consequent share of happiness * ?"

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* Vide SMITH's Introduction to Botany.

CURIOUS TENURE

AT CASTOR, IN LINCOLNSHIRE.

I ANNEX, for the perusal of the curious readers of the Enquirer, an account of a singular custom annually practised here; and recommend to antiquarians an enquiry concerning the origin of it.

The manor of Broughton is held of the lord of the manor of Castor, or of Harden, a hamlet in the parish of Castor, by the following service. On Palm-Sunday, a person from Broughton attends with a new cart whip, made in a particular manner; and, after cracking it three times in the church porch, marches with it upon his shoulder through the middle isle into the choir, where he takes his place in the lord of the manor's seat. There he remains till the minister comes to the second lesson; he then quits his seat with his whip, having a purse that ought to contain thirty silver pennies (for which, however, of late years, half a crown has been substituted) fixed to the end of its lash, and kneeling down on a cushion, or mat, before the reading desk, he holds the purse suspended over the minister's head all the time he is reading this second lesson; after which he returns to his seat. The whip and purse are left at the manor-house. Some ingenious persons have devised a reason for every circumstance of this ceremony. They suppose that the *thirty* pennies are meant to signify the *thirty* pieces of silver mentioned in the second lesson, which Judas received to betray his master; that the *three* cracks of the whip in the porch, allude to Peter's denying his Lord thrice, &c. &c. These conjectures, I apprehend, have more of fancy than of truth in them; and I indulge the hope that a more satisfactory derivation of this curious ceremony will be given in the next Number of the Enquirer.

Castor, June 5, 1812. B.

Il Decamerone di Boccaccio, in the Roxburgh Library.

At the sale of the late Duke of Roxburgh's library, at his residence in St. James' Square, the first edition of *Il Decamerone di Boccaccio,* folio, Venet. Valdarfee, 1471, of which no other perfect copy is known to exist, was sold on the 17th of June, for £2260, to the Marquis of Blandford; the following is a correct progressive list of the different biddings, and which presents, in my opinion, a pretty strong and curious symptom of book-mania.

THE FIRST BIDDING WAS

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The Marquis was principally opposed by Earl Spencer.

At the same sale the Giunti Edition of the Decamerone, 1521, sold for twenty-nine pounds, and the counterfeit of the same for two pounds thirteen shillings *.

SIVAD.

SIMPLE RULE FOR GAUGING CYLINDERS,

BY MR. W. NICHOLSON, BLOOMSBURY SQUARE, LONDON.

MULTIPLY the diameter of any cylinder, in inches, by itself, and cut off the right-hand figure, and the remaining figures express the ale gallons in a yard length of that cylinder, near enough for almost every practical purpose; it giving only one gallon in 379 too little; (whence the results may easily be corrected when necessary) or suppose the gallon to contain 282.744 cubic inches, instead of 282.

Demonstration. Let d be the diameter in inches; then, by a well known rule in mensuration, $dd \times \cdot 7854 \times 36 \div 282 =$ the content, in ale gallons, of a yard of such cylinder, $= dd \times 28.2744 \div 282, = dd \div 10 \times 282.744 \div 282, = dd \div 10 \times 1.002638 = dd \div 10 \times (1 + \frac{1}{379})$, which is extremely near the true result, instead of $dd \div 10$, obtained by omitting $dd \div 10 \times \frac{1}{379}$. *Q. E. D.*

ON YEAST USED IN BREWING.

As some of your readers may be inclined to believe that the query inserted in your first Number, respecting the exchange of yeast, has no foundation in practice, being perhaps contrary to the experience of private brewers, who brew only small quantities; I beg leave to quote the following passage in support of it, from "Richardson's Theoretic Hints on Brewing." OBSERVATOR.

"It is a well-known fact, that yeast, used as a ferment, and invariably continued for a length of time, the produce of one gyle supplying the ferment of the next, does so far degenerate, that (like the degeneracy of corn sown upon the same field which produces it, for a succession of crops) it will not effect a perfect fermentation; and yet the same yeast, employed by another brewer, shall do its duty. In confirmation of this, having a concern in a vinegar brewery at Beverley, I am frequently necessitated to promote the fermentation there, by yeast taken from the brewery at Hull; and to invigorate the same operation at the latter place, with yeast brought from the former; notwithstanding the malt employed at both places is made at the same malthouse, the process of brewing, as near as circumstances will admit, is the same, and the difference exists only in the water; one brewery being supplied by a well, the other by the river Hull. This is the more remarkable, as when these exchanges take place, the yeast at Hull will not at all produce a fermentation to be depended on; though it operates perfectly well at Beverley, where the yeast is precisely in the same predicament, as far as respects its non-performance there, and its perfect operation so exchanged. This latter was so strikingly exemplified to me, in the course of the last summer (1797), that the yeast produced sometimes at Beverley, would in no wise ferment a loaf of bread; nor could it be trusted in the gyle-tun there, at the same time that it was highly instrumental in effecting a perfect fermentation in the brewery at Hull."

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* The marks whereby to distinguish the true from the counterfeit edition, may be found at p. 173, vol. II. of the Enquirer.

ON FEMALE EDUCATION.

(Concluded from p. 172.)

Women have not their livelihood to gain by knowledge; and that is one motive for relaxing all those efforts which are made in the education of men. They certainly have not; but they have happiness to gain, to which knowledge leads as probably as it does to profit; and that is a reason against mistaken indulgence. Besides, we conceive the labour and fatigue of accomplishments to be quite equal to the labour and fatigue of knowledge; and that it takes quite as many years to be charming, as it does to be learned.

Another difference of the sexes is, that women are attended to, and men attend. All acts of courtesy and politeness originate from the one sex, and are received by the other. We can see no sort of reason, from this diversity of condition, for giving to women a trifling and insignificant education; but we see in it a very powerful reason for strengthening their judgment, and inspiring them with the habit of employing time usefully. We admit many striking differences in the situation of the two sexes, and many striking differences of understanding, proceeding from the different circumstances in which they are placed: but there is not a single difference of this kind which does not afford a new argument for making the education of women better than it is. They have nothing serious to do;—is that a reason why they should be brought up to do nothing but what is trifling? They are exposed to greater dangers;—is that a reason why their faculties are to be purposely and industriously weakened? They are to form the characters of future men;—is that a cause why their own characters are to be broken and frittered down as they now are? In short, there is not a single trait in that diversity of circumstances, in which the two sexes are placed, that does not decidedly prove the magnitude of the error we commit in neglecting (as we do neglect) the education of women.

If the objections against the better education of women could be overruled, one of the great advantages that would ensue, would be the extinction of innumerable follies. A decided and prevailing taste for one or another mode of education there must be. A century past, it was for housewifery,—now it is for accomplishments. The object now is, to make women artists,—to give them an excellence in drawing, music, painting and dancing,—of which, persons who make these pursuits the occupation of their lives, and derive from them their subsistence, need not be ashamed. Now, one great evil of all this is, that it does not last. If the whole of life, as somebody says, were an olympic game,—if we could go on feasting and dancing to the end,—this might do; but this is merely a provision for the little interval between coming into life and settling in it; while it leaves a long and dreary expanse behind, devoid both of dignity and cheerfulness. No mother, no woman who has passed over the few first years of life, sings, or dances, or draws, or plays upon musical instruments. These are merely means for displaying the grace and vivacity of youth, which every woman gives up, as she gives up the dress and manners of eighteen: she has no wish to retain them; or, if she has, she is driven out of them by fear of derision. The system of female education, as it now stands, aims only at embellishing a few years of life, which are in themselves so full of grace and happiness that they hardly want it; and then leaves the rest of existence a miserable prey to idle insignificance. No woman of understanding and reflection can possibly conceive she is doing justice to her children by such kind of education. The object is, to give to children resources that will endure as long as life endures,—habits that will ameliorate, not destroy,—occupations that will render sickness tolerable, solitude pleasant, age venerable, life more dignified and useful, and therefore death less terrible: and the compensation which is offered for the omission of all this, is a short-lived blaze,—a little temporary effect, which has no other consequence than to deprive the remainder of life of all taste and relish. There may be women who have a taste for the fine arts, and who evince a decided talent for drawing, or for music. In that case, there can be no objection to their cultivation; but the error is, to make these things the grand and universal object,—to insist upon it that every woman is to sing, and draw, and dance—with nature, or against nature,—to bind her apprentice to some accomplishment; and, if she cannot succeed in oil or water-colours, to prefer gilding, varnishing, burnishing, box-making, or shoe-making, to real and solid improvement in taste, knowledge, and understanding.

A great deal is said in favour of the social nature of the fine arts. Music gives pleasure to others. Drawing is an art, the amusement of which does not centre in him who exercises it, but is diffused among the rest of the world. This is true; but there is nothing, after all, so social as a cultivated mind. We do not mean to speak slightingly of the fine arts, or to depreciate the good humour with which they are sometimes exhibited;

but we appeal to any man, whether a little spirited and sensible conversation, displaying modestly useful acquirements, and evincing rational curiosity, is not well worth the highest exertions of musical or graphical skill. A woman of accomplishments may entertain those who have the pleasure of knowing her for half an hour with great brilliancy; but a mind full of ideas, and with that elastic spring which the love of knowledge only can convey, is a perpetual source of exhiliration and amusement to all that come within its reach;—not collecting its force into single and insulated achievements, like the efforts made in the fine arts—but diffusing, equally over the whole of existence, a calm pleasure—better loved as it is longer felt—and suitable to every variety and every period of life. Therefore, instead of hanging the understanding of a woman upon walls, or hearing it vibrate upon strings;—instead of seeing it in clouds, or hearing it in the wind,—we would make it the first spring and ornament of society, by enriching it with attainments upon which alone such power depends.

If the education of women were improved, the education of men would be improved also. Let any one consider (in order to bring the matter more home by an individual instance) of what immense importance to society it is, whether a nobleman of first-rate fortune and distinction is well or ill brought up;—what a taste and fashion he may inspire for private and for political vice;—and what misery and mischief he may produce to the thousand human beings who are dependent on him! A country contains no such curse within its bosom. Youth, wealth, high rank and vice, form a combination which baffles all remonstrance and invective, and beats down all opposition before it. A man of high rank, who combines these qualifications for corruption, is almost the master of the manners of the age, and has the public happiness within his grasp. But the most beautiful possession which a country can have, is a noble and a rich man, who loves virtue and knowledge;—who, without being feeble or fanatical, is pious—and who, without being factious, is firm and independent;—who, in his political life, is an equitable mediator between king and people; and, in his civil life, a firm promoter of all which can shed a lustre upon his country, or promote the peace and order of the world. But if these objects are of the importance which we attribute to them, the education of women must be important, as the formation of character for the first seven or eight years of life seems to depend almost entirely upon them. It is certainly in the power of a sensible and well-educated mother to inspire, within that period, such tastes and propensities as shall nearly decide the destiny of the future man; and this is done, not only by the intentional exertions of the mother, but by the gradual and insensible imitation of the child; for there is something extremely contagious in greatness and rectitude of thinking, even at that age;, and the character of the mother with whom he passes his early infancy, is always an event of the utmost importance to the child. A merely accomplished woman cannot infuse her tastes into the minds of her sons; and, if she could, nothing could be more unfortunate than her success. Besides, when her accomplishments are given up, she has nothing left for it but to amuse herself in the best way she can; and, becoming entirely frivolous, either declines the fatigue of attending to her children, or, attending to them, has neither talents nor knowledge to succeed: and, therefore, here is a plain and fair answer to those who ask so triumphantly, Why should a woman dedicate herself to this branch of knowledge? or why should she be attached to such a science?—because, by having gained information on these points, she may inspire her son with valuable tastes, which may abide by him through life, and carry him up to all the sublimities of knowledge;—because she cannot lay the foundation of a great character, if she is absorbed in frivolous amusements, nor inspire her child with noble desires, when a long course of trifling has destroyed the little talents which were left by a bad education.

It is of great importance to a country, that there should be as many understandings as possible actively employed within it. Mankind are much happier for the discovery of steam-engines, barometers, thermometers, and all the innumerable inventions in the arts and sciences. We are every day and every hour reaping the benefit of such talent and ingenuity. The same observation is true of such works as those of Dryden, Pope, Milton, and Shakspeare. Mankind are much happier that such individuals have lived and written;—they add every day to the stock of public enjoyment—and perpetually gladden and embellish life. Now, the number of those who exercise their understandings to any good purpose, is exactly in proportion to those who exercise it at all; but, as the matter stands at present, half the talent in the universe runs to waste, and is totally unprofitable. It would have been almost as well for the world, hitherto, that women, instead of possessing the capacities they do at present, should have been born wholly destitute of wit, genius, and every other attribute of mind of which men make so eminent an use: and the ideas of use and possession are so united together, that, because it has been the custom in almost all countries to give to women a different and a worse education than to men, the notion has obtained that they do not possess faculties which they do not cultivate. Just as, in breaking up a common, it is sometimes very difficult to make the poor believe it will grow corn, merely because they have been hitherto accustomed to see it produce nothing but weeds and grass—they very naturally mistake its present condition for its general nature. So completely have the talents of women been kept down, that there is scarcely a single work, either of reason or imagination, written by a woman, which is in general circulation, either in the English, French, or Italian literature;—scarcely one that has crept even into the ranks of our minor poets.

If the possession of excellent talentsis not a conclusive reason why they should be improved, it at least amounts to a very strong presumption; and, if it can be shown that women may be trained to reason and imagine as well as men, the strongest reasons are certainly necessary to show us why we should not avail ourselves of such rich gifts of nature; and we have a right to call for a clear statement of those perils which make it necessary that such talents should be totally extinguished, or, at most, very partially drawn out. The burden of proof does not lie with those who say, Increase the quantity of talent in any country as much as possible—for such a proposition is in conformity with every man's feelings: but it lies with those who say, Take care to keep that understanding weak and trifling, which nature has made capable of becoming strong and powerful. The paradox is with them, not with us. In all human reasoning, knowledge must be taken for a good, till it can be shown to be an evil. But now, Nature makes us too rich and magnificent presents; and we say to her—You are too luxuriant and munificent—we must keep you under, and prune you;—we have talents enough in the other half of the creation;—and, if you will not stupify and enfeeble the mind of women to our hands, we ourselves must expose them to a narcotic process, and educate away that fatal redundance with which the world is afflicted, and the order of sublunary things deranged.

One of the greatest pleasures of life is conversation; —and the pleasures of conversation are of course enhanced by every increase of knowledge: not that we should meet together to talk of alkalies and angles, or to add to our stock of history and philology—though a little of all these things is no bad ingredient in conversation, but, let the subject be what it may, there is always a prodigious difference between the conversation of those who have been well educated, and of those who have not enjoyed this advantage. Education gives fecundity of thought, copiousness of illustration, quickness, vigour, fancy, words, images, and illustrations;—it decorates every common thing, and gives the power of trifling, without being undignified and absurd. The subjects themselves may not be wanted, upon which the talents of an educated man may have been exercised; but there is always a demand for those talents which his education has rendered strong and quick. Now, really nothing can be further from our intention than to say any thing rude and unpleasant; but we must be excused for observing, that it is not now a very common thing to be interested by the variety and extent of female knowledge, but it is a very common thing to lament, that the finest faculties in the world have been confined to trifles utterly unworthy of their richness and their strength.

The pursuit of knowledge is the most interesting and innocent occupation which can be given to the female sex; nor can there be a better method of checking a spirit of dissipation, than by diffusing a taste for literature. The true way to attack vice, is by setting up something else against it. Give to women, in early youth, something to acquire, of sufficient interest and importance to command the application of their mature faculties, and to excite their perseverance in future life;—teach them, that happiness is to be derived from the acquisition of knowledge, as well as the gratification of vanity; and you will raise up a much more formidable barrier against dissipation, than an host of invectives and exhortations can supply.

It sometimes happens that an unfortunate man gets drunk with very bad wine,—not to gratify his palate, but to forget his cares: he does not set any value on what he receives, but on account of what it excludes;—it keeps out something worse than itself. Now, though it were denied that the acquisition of serious knowledge is of itself important to a woman, still it prevents a taste for silly and pernicious works of imagination;—it keeps away the horrid trash of novels, and, in lieu of that eagerness for emotion and adventure, which books of that sort inspire, promotes a calm and steady temperament of mind.

A man who deserves such a piece of good fortune, may generally find an excellent companion for all the vicissitudes of his life; but it is not so easy to find a companion for his understanding, who has similar pursuits with himself, or who can comprehend the pleasure he derives from them. We really can see no reason why it should not be otherwise; nor comprehend how the pleasures of domestic life can be promoted by diminishing the number of subjects in which persons who are to spend their lives together take a common interest.

One of the most agreeable consequences of knowledge, is the respect and importance which it communicates to old age. Men rise in character often as they increase in years;—they are venerable from what they have acquired, and pleasing from what they can impart. If they outlive their faculties, the mere frame itself is respected for what it once contained; but women (such is their unfortunate style of education) hazard every thing upon one cast of the die;—when youth is gone, all is gone. No human creature gives his admiration for nothing; either the eye must be charmed, or the understanding gratified. A woman must talk wisely, or look well. Every human being must put up with the coldest civility, who has neither the charms of youth nor the wisdom of age. Neither is there the slightest commiseration for decayed accomplishments:—no man mourns over the fragments of a dancer, or drops a tear on the relics of musical skill. They are flowers destined to perish; but the decay of great talents is always the subject of solemn pity; and, even when their last memorial is over, their ruins and vestiges are regarded with pious affection.

There is no connection between the ignorance in which women are kept, and the preservation of moral and religious principle; and yet certainly there is, in the minds of some timid though respectable persons, a vague, indefinite dread of knowledge, as if it were capable of producing these effects. It might almost be supposed, from the dread which the propagation of knowledge has excited, that there was some great secret which was to be kept in impenetrable obscurity, —that all moral rules were a species of delusion and imposture, the detection of which, by the improvement of the understanding, would be attended with the most fatal consequences to all, and particularly to women. If we could possibly understand what these great secrets were, we might perhaps be disposed to concur in their preservation; but, believing that all the salutary rules which are imposed on women are the result of true wisdom, and productive of the greatest happiness, we cannot understand how they are to become less sensible of this truth in proportion, as their power of discovering truth in general is increased, and the habit of viewing questions with accuracy, and comprehension established by education. There are men, indeed, who are always exclaiming against every species of power, because it is connected with danger: their dread of abuses is so much stronger than their admiration of uses—that they would cheerfully give up the use of fire, gunpowder, and printing, to be freed from robbers, incendiaries, and libels. It is true, that every increase of knowledge may possibly render depravity more depraved, as well as it may increase the strength of virtue. It is in itself only power, and its value depends on its application. But, trust to the natural love of good, where there is no temptation to be bad—it operates no where more forcibly than in education. No man, whether he be tutor, guardian, or friend, ever contents himself with infusing the mere ability to acquire; but giving the power, he gives with it a taste for the wise and rational exercise of that power; so that an educated person is not only one with stronger and better faculties than others, but with a more useful propensity—a disposition better cultivated—and associations of a higher and more important class.

In short, and to recapitulate the main points upon which we have insisted.—Why the disproportion in knowledge between the two sexes should be so great when the inequality in natural talents is so small; or why the understanding of women should be lavished upon trifles, we profess ourselves not able to understand. The affectation charged upon female knowledge is best cured by making that knowledge more general: and the economy devolved upon women is best secured by the ruin, disgrace, and inconvenience which proceed from neglecting it. For the care of children, nature has made a direct and powerful provision; and the gentleness and elegance of women is the natural consequence of that desire to please, which is productive of the greatest part of civilization and refinement, and which rests upon a foundation too deep to be shaken by any such modifications in education as we have proposed. If you educate women to attend to dignified and important subjects, you are multiplying beyond measure the chances of human improvement, by preparing and *medicating* those early impressions which always come from the mother; and which, in a great majority of instances, are quite decisive of character and genius. Nor is it only in the business of education that women would influence the destiny of men;—if women knew more, men must learn more—for ignorance would then be shameful—and it would become the fashion to be instructed. The instruction of women improves the stock of national talents, and employs more minds for the instruction and amusement of the world;—it increases the pleasures of society, by multiplying the topics upon which the two sexes take a common interest;—and makes marriage an intercourse of understanding as well as of affection, by giving dignity and importance to the female character. The education of women favours public morals; it provides for every season of life, as well as for the brightest and the best; and leaves a woman when she is stricken by the hand of time, not as she now is, destitute of every thing, and neglected by all; but with the full power and the splendid attractions of knowledge;—diffusing the elegant pleasures of polite literature, and receiving the just homage of learned and accomplished men.

ANECDOTES OF WILLIAM TELL.

As the famous history of William Tell has been variously related by different authors, I think the readers of the Enquirer will not judge the following *correct* account of the events in which he was so principal a performer, unworthy of their attention.

It can hardly be necessary to premise that the encroachments of Albert of Austria, and the tyrannical conduct of his bailiffs, particularly Gesler, caused the first fermentation in the minds of the high-spirited mountaineers of Switzerland. This was in the year 1307.

Planta, in his History of the Helvetic Confederacy, says, "in the night preceding the eleventh of November; came Furst, Melchtal, and Stauffacher, with each ten associates, men of approved worth, and who had freely declared their abhorrence of the unwarranted oppressions of the bailiffs. These three and thirty undaunted patriots, deeply impressed with the sense of their hereditary freedom, and firmly united by the dangers that threatened their country, being thus met in the field Rutli, suffered neither the vindictive wrath, nor the formidable power of the whole house of Hapsburg to divert them from their purpose, but with one heart and mind resolved—'that in this great enterprise none of them would be guided by his private opinion: that none would forsake his friends; but that they would all jointly live and die in the defence of the common cause: that each would in his own vicinity promote the object they had in view, trusting that the whole nation would one day have cause to bless this friendly union: that the Count of Hapsburg should be deprived of none of his lands, vassals, or prerogatives; and that his bailiffs, their officers and attendants, should not lose one drop of blood: but that the freedom they had inherited from their forefathers they were determined to assert, and to hand down to their posterity untainted and undiminished." Thus fixed in their resolves, while, with tranquil countenances and honest hands, each beheld and clasped his friend; while at this solemn hour they were wrapt in the contemplation that on their success depended the fate of their whole progeny; the three principals held up their hands to heaven, and in the name of the Almighty, who had created man to an inalienable degree of freedom, swore jointly and strenuously to defend that freedom. The thirty heard the oath with awe, and with uplifted hands attested the same God and all his saints, that they were firmly bent on offering up their lives for the defence of their injured liberty. They then calmly agreed on their future proceedings; but for the present each returned to his hamlet, observed profound secresy, and tended his cattle.

Meanwhile the progress of wanton oppression put a period to the life and cruelties of the bailiff Herman Gesler. Prompted either by restless suspicion or by some intimation of a meditated insurrection, he resolved to mark those who bore his yoke with most reluctance, and had recourse to an expedient, which, perhaps, had been practised by the ancestors of this people before they left their nothern seats*. He raised a hat on a pole at Uri, to which he commanded all passengers to pay obeisance. William Tell of Burglen in the valley of Uri, son-in-law to Walter Furst, a man in the full vigour of life, of an undaunted spirit, and one of the sworn friends of liberty, scorned to pay the respect Gesler had ordained to this symbol of his usurped authority.—An unguarded declaration of his contempt for this badge of servitude, induced the bailiff to seize his person; and thinking it unsafe, on account of the many friends and relations he had in his native valley to detain him there, he resolved (contrary to the privileges of the people, which forbad their being sent to foreign prisons) to convey him across the lake. They had not navigated far beyond the Rutli, when on a sudden a boisterous south wind burst forth from the inlets of St. Gothard, and raised the waves on the lake to a tremendous height. The bailiff, justly alarmed at his own danger, ordered Tell, whom he knew to be an expert boatman, to be freed from his fetters, and intrusted with the helm. They rowed in anxious suspence under the towering precipices on the right of the lake, till having approached the Axelberg, Tell steered close to a projecting cliff, sprung on shore, and leaving the boat to contend with the rocks and waves, climbed up the steep, and fled to Schwitz. The bailiff likewise escaped the storm, and landed at Kusnacht near the lower extremity of the lake; but Tell, aware of his own danger while such a foe survived, met him in a hallow road, and shot him with an arrow. Such was the end of Herman Gesler. He fell before the appointed hour for the deliverance of the country,

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* Grasser, a Swiss writer, has pointed out some resemblance between various incidents in Tell's history, and those of Tocco, a Scandinavian, whose feats are recorded by Saxo. The popular tale of the apple, which Tell was ordered to shoot at on the head of his infant son, is wholly omitted by Muller and other Swiss historians, and is generally regarded as a fiction.

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without any co-operation on the part of the indignant people, but merely by the provoked resentment of a free, high-minded individual. The deed, it is true, cannot be justified upon legal principles; and Tell has more than once been branded with the opprobrious appellations of conspirator and assassin: but it was a deed similar to many which have been highly extolled in history: nor is it at all expedient, or necessary, towards a well-regulated government, that oppression should have no limits, and that tyrants should have nothing to fear. This deed of William Tell cheered the hopes, and animated the courage of the sworn associates; but many feared lest the anticipation might rouse the vigilance, and call forth all the efforts and precautions of the surviving bailiff. They continued, however, carefully to conceal their project, and thus ended the year 1307*.

One of the confederates, a youth of Underwalden, who paid his addresses to a maid-servant in the castle of Rossberg, was frequently admitted to nightly visits in the castle. One of these visits he paid at the first hour of the year 1308, when he ascended by a rope to one of the windows. No sooner had he been introduced, than twenty of his companions, who lay concealed in the moat, were likewise drawn up, and entered at the same window. These immediately secured the keeper, his four soldiers, and all his attendants; took possession of the gate, and observed strict silence. Soon after day-break, twenty other men of Underwalden came to Sarnen with their usual new year's gift to the bailiff, which, on this occasion, consisted of a large number of calves, goats, and lambs, and abundance of poultry and game. Landenberg, whom they met on his way to church, commended their liberality, and ordered them to convey their presents to his castle. Being arrived at the gate, one of them blew a horn, and each drew out a pointed weapon, and fixed it on his staff. Thirty more of the confederates hastened from a neighbouring wood; and these jointly took possession of the castle, and secured all those they found within its walls. The appointed signal being now given, and instantly repeated from Alp to Alp, the whole country of Underwalden rose in arms. The men of Uri seized on Gesler's opprobious castle; and the Schwitzers, led by Stauffacher, flew to the lake Lowerz, and possessed themselves of the tower of Schwanau. So punctual and expeditious were all these movements, that the messengers who reciprocally conveyed the tidings of the successes, met near the middle of the lake. Landenberg, aware of his danger, endeavoured to escape across the fields between Sarnen and Alpenach, but was overtaken and seized. He, and all the keepers, officers, and soldiers found in the castles, were conducted to the frontiers; where, after they had taken a solemn oath never to return within the confines of the three cantons, they were dismissed without the least hurt or molestation.—The consciousness of returning liberty exhilirated every mind; and yet, amidst all the tumult and confusion that ever attends popular commotions, and all the exultation that unavoidably succeeds the happy issue of so hazardous an enterprise, it is well attested, that, in this instance, not one drop of blood was shed, and no proprietor whatever had to lament the loss of either a claim, a privilege, or a single inch of land—Landenberg repaired to King Albert; and the Swiss met on the next succeeding Sunday, and once more confirmed by oath their ancient, and (as they have ever fondly named it) their perpetual league."—Thus far Mr. Planta, who in this extract has given us a lively and correct narrative of a most interesting event—the account of William Tell differs very materially from those in general circulation; no doubt much of the marvellous has been added to the sober details of history—his character will however, when placed in its true light, always demand the applause and admiration of posterity—and the conduct of his brave compatriots leave us nothing to lament; but that the league of union they formed for the mutual defence of their liberty, should have been *misnamed* "perpetual."

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* The name of Tell, except at a meeting of the community of Uri, in 1239, when an aid was voted for Berne, occurs no more in the history of this country. He appears to have returned to his house at Burglen, upon the site of which a chapel has since been erected, as well as on the spot where he leaped on shore. He is said to have been drowned in 1354, in an inundation: two sons of his are mentioned, William and Walter. His male issue became extinct in 1684, and the female not before 1720. No honours, or rewards whatever, were conferred on him or on his progeny; nor indeed on any of those who, on this occasion, freed their country. All their descendants lived in obscurity, some are even said to have died in hospitals.—Such disinterestedness did their ancestors combine with so much heroism.

N.

GLEANINGS.

(Continued from page 70.)

LAVATER.

Most people look up to Lavater as the father of the science of Physiognomy (if science it may be called) but the whole *Lavaterian* system may be traced to an old book, by *John Baptista Porta*, published in Latin, at Naples, in the year 1601, under the title, "De humana Physiognomia;" this work is illustrated with many plates, and is exceedingly curious. See *Dr. Clarke's Bibliographical Dictionary.*

Old Inscription over a Chimney Piece in a House at Little Gidding in Huntingdonshire.

Hee that by reprofe of our errors, or remembrance of that which is more perfect, seekes to make us better, is welcome as an angel of God.	And	Hee that by a cheereful participation of that which is good confirms us in the same, is welcome as a christian friend.

But,

Hee that any way goes about to divert or disturb us in that which is and ought to bee amongst Christians, though it bee not usuall with the world, is a burthen whiles he stayes, and shall beare his judgment whosoever he be.	And	Hee that faults us in absence for that which in presence hee made shew to approve of, shall, by a double guilt of flattery and slander, violate the bonds of friendship and christianity.

Vide Hearne's Works, No. X. p. 5.

Money.

"In ancient ages of the world, before the invention of money, men were all for bartering of commodities, as Diodeme's Armour was valued at ten cows, and Glaucus's golden armour at one hundred. I read of no money till Abraham paid four hundred shekels for a burying-place. The old Britons used iron rings and plates for money. The Grecians made a law for the using of money, calling it *νομισμα, ἀπὸ τον νόμȣ*, the Latins, *pecuniam, á pecu* (the image of a cow being stamped on it), and *monetam*, from *μένω* to remain. The Hebrews called it *Mahah*, the French *Monoy*, the Spanish *Moneda*, the Germans *Munis*, the Anglo-Saxon *Mynet*, whence *Mint.*" *Vide Hearne's Works.*

Derivations of Welsh Names, &c.

"The old Britons were the first of six nations, which had the possession of this land successively, viz. *old Britons, Belgæ, Romans, Saxons, Danes*, and *Normans*. The old Britons came originally from the Tower of Babel, thus: shortly after the deluge, the Lord having blessed Noah and his posterity, saying, *Be fruitful, multiply and replenish the earth;* they notwithstanding had been fruitful, and had, in a short time, multiplied incredibly, yet they obstinately refused to replenish the earth, but said, *Go too, let us build a citie and a tower in it, whose topp may reach unto heaven, least we be scattered over the face of the whole earth;* so they intended to dwell in their citie together, and to secure them from any future flood in the tower, but the Lord confounded their one (*viz.* the Hebrew) in fifty-two languages, so that they, not understanding each other, *Babling* about carrying on the worke, were necessitated to give it over unfinished, and then each principall man amongst them having sought out, and brought together, such as could understand his language, conducted them into the severall parts of the earth, where many of them are called after their conducters' names to this day; as the *Medes* from *Madai;* the *Muscovites* from *Mesceh*, alias *Mosoch;* the *Canaanites* from *Canan;*

and *Gomer*, the eldest son of *Japhet*, calling together all such as could understand *Gomerarg*, as the speech of *Gomer*, conducted them to, and seated them in, France, where they were called *Gomeri*, after old *Gomer*, and some of them into *Britaine*. But because he doth not particularize the place where they were first seated, give me leave to conjecture, that it was in *Mount Gomeri*, in Wales, (for that is also called *Trefaldguin*, the famous old town). From *Mount Gomeri* they might dilate their plantation over all *Mount Gomerishire*, still called *Gomori*, as long as they had such garments as their forefathers had; but those being worn out, and they being destitute (in this wilderness) of meanes to recruite apparell, yet found expedients to paint their naked bodies with severall coullers of cloathes, and then they were no longer called *Gomire*, but *Britons*, *(i. e.) Painters*, and their land *Britaine*, *(i. e.) the painted nation*. Some families painted Gwin, *white;* some Dhu, *black;* some Glas, *blue;* some Goch (pronounced Goff) *red;* some Lloid, (pronounced Floyd) *green;* and this is the originall of those common names Gwin, Dhu, Glas, Goff and Floid, amongst their posteritie in Wales to this day."

From a curious old Tract republished by Hearne, entitled " A Fool's Bolt soon shott at Stonage." Author unknown.

Ancient Division of Time.

" Five hundred and sixty-four atoms make a moment, four moments a minute, two minutes and an half a prick or point, four pricks or points a tid or hour in the course of the sun, six tids a fyrthling, four fyrthlings a day, and seven days a week."

From a very ancient and very valuable MS. (in vellum) in the Ashmoleian Museum, the author whereof was Byrdferthus, Brightfertus or Bridfertus, monk of Ramsey, or as others say Thomey, who, according to Bale, flourished in the year 980, *in the reign of King Ethelred.*

The Nerves.

Errors in science have almost universally been the offspring of false or imperfect analogies; and it is curious to observe how a single term, used by way of illustration, has engendered an entire theory with all its appendages. Thus the *nerves* have been called as they really are in appearance, *strings;* but strings are capable of different degrees of *tension,* and according to these *vibrate* with greater or less force. Hence the nervous system was said to be *braced* or *relaxed;* its functions depended upon its *tone;* the sympathies of one nerve with another were owing to similarity of tension, as had been remarked with respect of fiddle-strings; nerves communicated their vibrations to the brain, and excited in that organ tremulous motions which were the immediate cause of sensation; and so forth. It is a pity that all this ingenious and well connected system is overthrown by the single fact, that the nerves always lie *unstretched* in a soft bed of cellular substance, to which they are attached by innumerable minute threads, so as to be *utterly incapable* of any motion like the vibrating of a cord.

Dr. Aikin's Essays, p. 427, 8vo. 1811.

A Commandment given by the Queen's most excellent Maiestie the Twelfth of Februarie, and 22d of her Highnesses Reigne, and declared by the Lord Chauncellor of England, and other the Lordes of her Maiesties most honourable Privie Counsel in the Starre Chamber, concerning clokes and ruffes of excessive lengthe and depthe.

It is also to be understoode that the saide 12th day of Februarie, in the present yeare 1579, by the Queenes Maiesties expresse commandmente, it was declared and published by the Lord Chauncellor, and other the Lordes of her Maiesties said Counsell, that from the one and twentieth of this moneth, no person shall use or weare such excessive long clokes, being in common sight monstrous, as now of late are begonne to be used; and before two yeere's past hath not been used in this realme. Neither also shoulde any person use or weare such great and excessive ruffes in or about the vppermost parte of their neckes, as had not been used before two yeeres past; but that all persons shoulde in modest and comelie sort leave off such fonde, disguised, and monstrous manners of attyring themselves, as both was unsupportable for charges, and undecent to be worne.

And this her Maiestie commaunded to bee observed, upon paine of her high indignation, and the paines thereto due, and willed all officers to see the reformation and redresse thereof, to the punishment of any offending in these cases as persons wilfully disobeying or contemning her Maiesties commandment.

Given the 22d yeere of her Highnesses reigne, as is before expressed. God saue the Queene.

Imprinted at London, by Christopher Barker, Printer to the Queene's most excellent Maiestie. Cum privilegio Regiæ Maiestatis. Anno Dom. 1579.

Talents and Genius.

"A man of *Talents* has a much fairer prospect of good fortune than a man of *Genius*. There are few instances of *Talents* being neglected, and fewer still of *Genius* being encouraged. The world is a perfect judge of *Talents*, but thoroughly ignorant of *Genius*. Any art already known, if carried to a great height, is at once rewarded; but the new creations of *Genius* are not at first understood, and there must be so many repetitions of the effect before it is felt, that most commonly death steps in between *Genius* and its fame."

Hortus Siccus.

"Darby, a gardener at Hoxton, has a folio paper-book, in which he has pasted the leaves and flowers of almost all manner of plants, which make a pretty show, and are more instructive than any cuts in Herbals." This was in December 1691, and was probably the origin of the *Hortus Siccus* among us.

Archælogia, Vol XII. No. 10.

Antiquity of clock-making.

The first clock with wheels which was known in France, was that given to Pepin the Short by Paul I. In 807, the friend and protector of the arts in the east, Haraun-al-Raschid, presented to Charlemagne a clock, of which the historians of the times speak with admiration; these clocks were imitated by the Italians. To Gerbert d'Aurillac, preceptor to Otho III. is attributed the invention of a clock, the movement of which was regulated by a balance. The clock of the Palais was the first which Paris possessed; it was made by Henry de Vic, who was sent for by Charles V. from Germany; that of the church of Lyons by Nicholas Lippius; that of Strasburg, and of Lund, in Sweden, so much praised by Derham, show the rapid progress which the art had made in the sixteenth and seventeenth centuries, and lead us to that perfection to which it arrived about the middle of the last century. The English invented the watch, and repeating pendulums. *Peuchet's Dictionnaire universel, &c.*

Derby, May 12, 1812. CURIOSUS.

MR. EMERSON'S DESCRIPTION OF RATIO.

The following was inserted in the third Number of the Mentor Magazine, page 200, at my request, but as that work was discontinued, it did not receive the wished-for discussion of the Literati. If agreeable to your plan, I will thank you for its insertion in Number VII. Enquirer.

June 9, 1812. M. M.

Mr. Emerson, at Def. II. Sect. 2. of his Doctrine of Proportion, has defined Ratio "as the quotient or number arising by dividing the former of two homogeneous quantities by the latter; which number may be either whole, fractional, or surd."

If this definition of Ratio be just, it will include the whole doctrine of Proportion universally, whether the quantities be *commensurable* or *incommensurable*.

The opinion of some of the learned readers of the Enquirer on this matter, would be a *real* service to the young geometers of the present age, who find so great a difficulty to understand the fifth book of Euclid's Elements.

The following extract, on the same subject, I have presumed to transmit for insertion, to be translated into English, by any of your ingenious correspondents, as not being able thoroughly to understand it, through a limited education. It is taken from page 379, Playfair's Geometry, first edit. Notes on Def. 5, 5, Euclid.

" On ne peut demontrer que de cette maniere, (la réduction à l'absurde) la plupart des propositions qui regardent les incommensurables. L'idee de l'infini entre au moins implicitement dans la notion de ces sortes des quantités; et comme nous n'avons qu'une idée negative de l'infini on ne peut demantrer directement, *et a priori*, tout ce qui concerne l'infini mathematique."

ARGUMENTS

AGAINST THE EXISTENCE OF TROY.

How is it possible that at the period of civilization when Troy is represented to have existed, a fleet of twelve hundred ships could have been procured on no very pressing emergency; and yet that, several centuries afterwards, when the Grecians were exposed to inevitable destruction, unless averted by the most vigorous resistance, their whole united fleet, after a long preparation, should have amounted only to three hundred and seventy-eight ships! Next we are told, that the army remained nine years inactive, in an enemy's country, when they could procure subsistence only by plundering the whole of that part of Asia Minor; yet by Homer's account, both Patroclus and Achilles could have taken the city in a single day, if it had not been saved both times by the interposition of some of their deities. The site of Troy never has been ascertained even by the ancients. Several of their best geographers were natives of Phrygia, but never could, by the closest investigation, trace any remains of the city, and indeed could find no situation corresponding in any degree to the description of Homer. Alexander, whose survey of the country may have been supposed to have been the most accurate, built his city in a spot confessed by all to be totally different from Homer's Troy. Mr. Bryant has shown that, until the Grecians had begun to make enquiries, the natives had no tradition even of the name of the city. Modern travellers have differed in a most extraordinary manner in their descriptions of the country. So wide is their discrepancy, that it can be accounted for, charitably, only on the supposition that enthusiasm had blinded their views, and led them to trace similarity where a child would have discovered the most irreconcileable contrariety. The classical dreams of the romantic Chevalier have obtained little credit, and yet he positively avers that his description is correct. Gell, Morritt, Wood, &c. &c. all assert the merit and accuracy of their respective maps, but all disagree.

What then are we to draw from this farrago of contradiction, misrepresentation, and inaccuracy? That no such city as Troy ever existed. Otherwise it would be difficult to account for the wonderful manner in which every vestige of it disappeared in a few centuries, a circumstance which can only be paralleled by the case of those cities which the righteous wrath of the Almighty had doomed to signal punishment.

But Mr. Bryant's research has not left this question undecided. It appears that very old traditions record, that Homer found in a temple in Egypt a poem, relative to a war against a city called Troy, situated near Memphis, and that he embellished and translated this poem into the Greek language, and laid the scene of action in the opposite shore of Asia Minor. The poem itself affords internal evidence in confirmation of this very curious and insuperable argument. The Mythology which Homer uses was unknown to the Grecians, at the latest period at which the Trojan war can be fixed. Most of the names also Mr. Bryant has analysed, and finds to be chiefly derived from the Egyptian dialect.

CLASSICAL JOURNAL.

CHAUCER'S POEMS.

I CONCEIVE that your Manchester Correspondent W. F. has mistaken, or paid little attention to the letter of Herewardus de Brunne, or he would have seen that it is the *Pilgrim's* Tale, and not the *Plowman's*, that H. de B. wishes to be communicated to the Enquirer. A copy of Chaucer's Works (Black-letter, folio) now lies before me, but the Pilgrim's Tale is not in it, though in an advertisement to the reader is the following notice: "Whereas in the life of Chaucer mention is made of the Tale, called the Pilgrim's Tale, which is there said to have been seen in the Library of Mr. Stow, and promised to be printed as soon as opportunity should offer; I have for the procuring of it used all diligence imaginable, not only in searching the libraries of both universities, but also all private libraries that I could have access unto; but having no success therein, I beg you will please to accept my earnest endeavours to have served you: and take what is here printed, it being all that at present can be found that was Chaucer's." It may be necessary to notice that this edition is printed at London, 1686.

Near Leeds, June 16, 1812. J. H. N.

TO THE CONDUCTORS OF THE ENQUIRER.

HEARNE, in a letter to Mr. Bagford concerning Chaucer and his poems, says, that "amongst Mr. Selden's printed books in the Bodleian Library is a quarto collection of old romantic pieces, the first of which is *The story of the noble Kynge Richard Cure de Lyon*, printed at *London* by *Wynkin de Worde, an.* MDXXVIII. The author's name is not added, and therefore it is put down in Dr. Hyde's Catalogue as an anonymous tract; but upon consulting the book, I find that somebody, perhaps one that was formerly owner of it, has written the following words at the beginning, *By Jeffree Charsher, Pooet Laret.* What authority he had for this I will not pretend to say." Can any of the contributors to the Enquirer furnish that work with a copy of this piece; or give me any information respecting it? Hearne in the same Letter goes on to observe, that "in this Library we have another collection of old English pieces, which was also Mr. Selden's, in which is the *Plowman's Tale*, with a short exposition of the words and matters, printed at Lond. MDCVI. Quarto." This tale he characterizes in the following words. "For not only the regular, but secular clergy were exasperated against Chaucer, for the freedom he had taken to expose their lewdness and debauchery; but nothing gave them so much offence as the *Plowman's Tale*, in which he has, in lively colours, described their pride, covetousness, and abominable lust, and showed that the Pope is Antichrist, and they his ministers. Such a satire, made by a person of his note and distinction, and so much celebrated for his wonderful fine parts, and exquisite learning, and judgment, could not but work mightily upon them, especially when many of them had arrived at so high a pitch of wickedness, and were drowned in sloth and luxury."

Hearne, who we must suppose was well acquainted with Chaucer's writings, makes in this Letter no allusion to the *Pilgrim's Tale* enquired after by Herewardus de Brunne, although he particularly mentions *Thinne's* Edition of his Works. The Plowman's Tale referred to in your last number by W. F. and alluded to above by Hearne, is by no means scarce, being found in Speght's Edition, folio, 1687; in the preface to which Edition mention is made of the *Pilgrim's Tale*, and of the unsuccessful exertions which the Editor had made to procure *a copy* of it.

M. PHOSTON.

LITERARY MISCELLANIES.

(Continued from page 193.)

The Pretender.—In the rebellion of 1745, it is well known, that after the discomfiture of the rebels at the battle of Culloden, by the royal army under the command of the Duke of Cumberland, government issued a proclamation in which they offered a reward of thirty thousand pounds for the apprehension of the Pretender, dead or alive.

In opposition to this, the following curious paper was issued by the Pretender and his council.

CHARLES, PRINCE OF WALES, &c.

Regent of the kingdoms of Scotland, England, France, and Ireland, and the dominions thereunto belonging.

" Whereas we have seen a certain scandalous and malicious paper, published in the stile and form of a Proclamation, bearing date the 1st instant, wherein, under pretence of bringing us to justice, like our royal ancestor, King Charles the First, of blessed memory, there is a reward of Thirty Thousand Pounds sterling, promised to those who shall deliver us into the hands of our enemies, we could not but be moved with a just indignation at so insolent an attempt: and though, from our nature and principles, we abhor and detest a practice so unusual among Christian princes, we cannot but, out of a just regard to the dignity of our person, promise the like reward of thirty thousand pounds sterling, to him, or those, who shall seize or secure till our further orders, the person of the Elector of Hanover, whether landed, or attempting to land in any part of His Majesty's dominions. Should any fatal accident happen from hence, let the blame lie entirely at the door of those who first set the infamous example.

" CHARLES, P. R.

" Given at our camp at Knilockeill, Aug. 22, 1745.

" By His Highness' Command,

" J. MURRAY."

The original paper from which the above was copied, is so rare, that I never heard of any other than that which accident lately deposited in the British Museum; the fact however itself is mentioned by Hume, and other historians.

Cowper.—Speaking of his own life in a letter to Mr. Parr, dated March 1791, Cowper says, with that extreme modesty which was one of his most remarkable characteristics; "From the age of twenty to thirty-three, I was occupied, or ought to have been, in the study of the law; from thirty-three to sixty, I have spent my time in the country, where my reading has been only an apology for idleness; and where, when I had not either a magazine, or a review, I was sometimes a carpenter, at others a bird-cage maker, or a gardener, or a drawer of landscapes. At fifty years of age I commenced author; it is a whim that has served me longest and best, and will probably be my last."

May 30, 1812. *Hayley's Life of Cowper, Vol. I.*

D. COPSEY.

ADDITIONAL REMARK ON ANTIQUARIAN QUERIES

PROPOSED IN NO. V.

Mr. Copsey of Bocking says, "I apprehend that by Windows of *Nine and Five Dayes,* are intended windows of stained glass, on which should be represented the transactions of Christ, or the Acts of the Apostles which occurred in those periods of time."

SOLUTIONS AND REPLIES

TO QUERIES PROPOSED IN THE PRECEDING NUMBERS.

Mr. J. E. Savage of Surfleet, remarks respecting the twenty-second Query proposed in No. IV. that Dr. Hales, in the year 1753, communicated to the public a description of a sea-gauge, which he had invented to measure unfathomable depths, and employed the ingenious Mr. Hawksby to make the machine*, which was tried in various depths, and answered with great exactness; the instrument was at last lost near the Bermudas.

QUERY 43.

Answered by J. B——n, London.

THE descent of the bodies called Aeroliths, or air-stones, was long doubted; but of late the fact has been so well attested, that the judicious give full credit to the phenomenon. These stones generally appear luminous in their descent, moving in oblique directions, with very great velocity, and commonly with a hissing noise; they are frequently heard to explode or burst, or seem to fly in pieces; they often strike the earth with such force as to sink several inches below the surface. They are always different from the surrounding bodies, but in every case similar to each other, being semi-metallic, coated with a thin black encrustation. They bear strong marks of recent fusion. Chemists have found on examining these stones, that they very nearly agree in their nature and composition, and in the proportions of their component parts. From this it is reasonable to conclude that they have all the same origin. To account for this phenomenon various hypotheses have appeared: I shall mention three, 1. That they are little planets, which, circulating in space, fall into the atmosphere, which by its friction diminishes the velocity, so that they fall by their weight. 2. That they are concretions formed in the atmosphere. 3. That they are projected from lunar volcanos. These are the most probable conjectures I can meet with, and of these, the two former possess a very small share of probability, but there are very strong reasons in favour of the last. Among these reasons are the following. 1. Volcanos in the moon have been observed by means of the telescope. 2. The lunar volcanos are very high, and the surface of the globe suffers frequent changes, as appears by the observations of Schroëter. 3. If a body be projected from the moon to a distance greater than that of the point of equilibrium between the attraction of the earth and moon, it will, on the known principle of gravitation, fall to the earth. 4. That a body *may be* projected from the lunar volcanos beyond the moon's influence is not only possible, but very probable; for on calculation it is found, that four times the force usually given to a twelve pounder will be quite sufficient for this purpose; it is to be observed, that the point of equilibrium is much nearer the moon, and that a projectile from the moon will not be so much retarded as one from the earth, both on account of the moon's rarer atmosphere, and its less attractive force. On this subject see Mr. Howard's valuable paper in the Philosophical Transactions for 1802; and Dr. Hutton's Dissertation in the new abridgment, part 21.

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* A description of this instrument will be acceptable. ED.

Similar in substance is a communication from *J. H. N. near Leeds,* who refers to the article *Ærolith* in the Imperial Encyclopedia.

Mr. J. Faines, of Horbury Bridge near Halifax, supposes that these stones are conveyed into the air by water spouts.

Mr. Joshua Bamford, of Holthead near Huddersfield, conjectures that the stones in question, are concretions formed in the atmosphere.

Answered by Mr. D. Capsey, of Bocking.

Various are the opinions of men of science, respecting the origin of meteoric stones: but that such substances have fallen in various places is a fact sufficiently established; numerous well authenticated instances might be adduced, which have occurred both at home and abroad: I shall mention only one. On the 17th of May 1806, a large ball, resembling a metallic substance, fell within a short distance of Basingstoke, in Hants; it weighed 2 pounds and a half; and when taken up was quite hot: it is now in the possession of Mr. J. Jefferson, of Basingstoke, who sent a relation of the phenomenon to a periodical publication*, whence this account was extracted.

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* Evangelical Magazine.

These stones, on being analized, are generally found to be of a ferruginous nature, and to contain a great deal of lime and sulphuric acid. Since it has been ascertained by means of the telescope that volcanic eruptions often take place in the moon, it has been conjectured by some that the masses of stone which have fallen on the earth were discharged from these lunar volcanos with such force, that coming within the influence of the earth's attractive power they have been brought to its surface. The principal objection to this hypothesis seems to be, that the fall of these stones is always attended by a heavy thunder-storm, and their descent immediately preceded by very loud explosions; whereas, if they were projected from volcanoes in the moon, their appearance might take place during any temperature of our atmosphere.

It is certain that a great quantity of earthy and other particles is raised by the sun in evaporation; this is evident from the sediment which is deposited by rain water.

Perhaps the formation of meteorolites may be accounted for on this principle, by supposing that when the electric fluid rushes from one cloud to another, or from a cloud to the earth, it carries with it all the various particles which have been raised into the air with the vapours by the heat of the sun, and which being thus brought forcibly into contact, become a solid body, which by its weight descends immediately to the earth.

Mr. M. Harrison, of Crosland near Huddersfield, says, "Dr. Chladni endeavoured to prove that the meteors from which these stones fell were bodies floating in space unconnected with any planetary system attracted by the earth, in their progress. Laplace suggests the probability of their having been thrown off by the volcanos of the moon. The greater number of philosophers consider them with Mr. King, and Sir William Hamiltion, as concretions actually formed in the atmosphere." *See Dr. Thomson's Chemistry*, vol. iv. p. 127, fourth edition.

Dr. Davy has rendered it extremely probable that the newly discovered metals silicum, alumium, calcium, and magnium, are capable of being dissolved in hydrogen gas, and on this account I think it easy to give a concise explanation of the cause of the fall of meteorilite. We know that hydrogen gas is capable of dissolving arsenic, sulphur, phosphorus, and carbon, and of forming respectively, arseniated, sulphurated, and phosphorated hydrogen; and since meteorilites generally consist of silica, alumina, and magnesia; and the metals, chromium, iron, manganese, and several others. Since then Dr. Davy has almost proved that hydrogen is capable of dissolving several metals; why, from analogy, may not hydrogen be capable, under favourable circumstances of dissolving iron, magnanese, &c.? Then if a mixture of the solutions of the above metal in hydrogen be ignited by an electric spark, may not metallic particles be precipitated, and by the agency of some mechanical operation compressed into a comparatively small bulk, and appear under the form of a solid? At least this hypothesis, or rather theory, appears to me more satisfactory than the supposed projection of these stones from the lunar volcanos.

Mr. John Smith, of Alton-Park near Cheadle, Staffordshire, says, various opinions have been advanced by philosophers to account for the origin and appearance of those mineral substances, which have fallen from the atmosphere, called aeroliths, or more properly meteoric stones. Some have conceived them to be concretions generated in the atmosphere; others have supposed them to be projected from volcanos on the earth, and others from those of the moon. A writer in the Edinburgh Ency. (art. Astronomy, vol. ii. p. 641) has suggested the probability of their being diminutive fragments of a planet which formerly existed between the orbits of Mars and Jupiter, and which the new planets Ceres, Pallas, Juno, and Vesta composed.—In the midst of this conflict of opinions, to which others might be added, who shall have the temerity to decide?—Probably it may for ages baffle all the attempts of philosophers to account satisfactorily for the substances in question.

Mr. R. T. jun. of Grantham, observes, the opinions of philosophers respecting atmospheric stones, are all hypothetical, and by no means satisfactory.—With respect to their falling from the atmosphere there is no doubt, as it has been actually ascertained, see *Philosophical Transactions* for 1802. In ancient history we find accounts of this nature, which until lately were regarded as fabulous, but from the certainty that such circumstances have taken place in modern times, we are now inclined to attach more credit to these accounts. In 1492 one fell in the Orkneys, and sunk a boat. A stone fell in Alsace, in 1492, which weighed two hundred and sixty-seven pounds. In 1672, two stones fell near Verona. In 1753, one fell in Bohemia, and one in France. In 1768, three fell in different parts of France. In 1790, a shower of stones fell in France, these were seen to fall. In 1795, one stone weighing fifty-six pounds was seen to fall in Yorkshire. In 1804, a stone fell in Normandy, and in April 1805, one fell in Scotland, I think near Glasgow. At the time when these stones fell, a fire-ball or luminous meteor was seen to burst with a sudden explosion like distant artillery. The weather has always been mild and serene. The stones, when picked up, have been found hot. It is very remarkable that all these stony substances which have fallen from the first records to the present time exhibit the same characters, and these bodies are unlike any others which the earth produces. Their specific gravity from 3,350 to 4,000, water being 1,000.—They are composed of round bodies, having particles of metallic substances interspersed through them. The external black crust is iron slightly oxidized, and a little nickel. The internal parts are grey. The source from whence these stones proceed is not at all known. It is conceived they may be irrupted from volcanos, but this cannot be the case, as they are found in places the most remote from them.—It has been suggested that they are formed in the atmosphere, but this opinion is equally improbable.—A third conjecture is, that they fall from the moon—and many other theories have been formed, all of which only tend to prove that the subject is at present inexplicable.

Mr. J. E. Savage, also sent a communication on this query.

Query 44.

Answered by Mr. I. B——n.

I am at a loss to imagine how this barbarous and farcical custom originated, unless it was invented by that favourite of the galleries, the late Mr. Suett. It is at any rate a practice "more honoured in the breach than in the observance," and it must be a matter of astonishment to every person, that the managers of our theatres should suffer such an absurdity to be practised. It cannot be reprobated in stronger language than is used in the same play by Hamlet, in his instructions to the players—"O'erstep not the modesty of nature; for any thing *so overdone* is from the purpose of playing, whose end, both at the first, and now, was, and is, to hold as 'twere the mirror up to nature;—now this overdone, or come tardy off, though it make the unskilful laugh, cannot but make the judicious grieve; the censure of which one, must in your allowance o'erweigh a whole theatre of others.—O! reform it altogether."—

Of a similar opinion is *Mr. J. Baines, jun.*

J. H. N. near Leeds, says, in most of Shakspeare's tragedies we find some comic characters. The Grave-digger in Hamlet is of this cast: and I conceive there is no authority but that of custom, for representing him as wearing such a number of waistcoats; and that it has been originally adopted by the players, for the purpose of keeping up the attention of the spectators, and also to divert them after the more solemn scenes of the distractions of Hamlet, and the untimely death of the amiable Ophelia; but as I am quite ignorant of the etiquette of theatrical exhibitions, I am, perhaps, incompetent to answer the query.

Mr. J. Bamford expressed very nearly the same opinion.

Query 45.

Answered by Mr. J. Baines, jun.

Dew rises in the evening; it is the moisture of the earth converted into vapour by heat; but the coldness of the night condences it, when its *falls* again to the earth.

Mr. M. Harrison says, in the day time, the rays of the sun convert the surface of aqueous fluids into vapour, which the atmosphere air holds in solution. The higher regions of the atmosphere contain less vapour than the strata nearer the surface of the earth, and every stratum of air descends a little lower during the night than it was during the day, owing to the cooling and condensing of the stratum nearest the earth, which deprives vapour of its latent heat, and it becomes dew.

The same, answered by Mr. J. B——n.

The origin and matter of dew, are doubtless from the vapour and exhalations that rise from the earth and waters; but it is still disputed, whether it is formed from the vapours *ascending* from the earth during the night, or from the *descent* of such as have been already raised through the day. The most remarkable experiment adduced in proof of its rising, is that of M. Du Fay, of the Academy of Sciences, at Paris. He supposed that if the dew ascended it must wet a body placed low down, sooner than one placed in a higher situation. To determine this, he placed two ladders against one another, meeting at their tops, spreading wide asunder at the bottom, and so tall as to reach 32 feet high. To the several steps of these, he fastened large squares of glass, placing them in such a manner that they should not overshade one another. On the trial it appeared exactly as M. Du Fay had apprehended, the lower surface of the lowest piece of glass was first wetted, then the upper surface, then the lower surface of the pane next above it, and so on, till all the pieces were wetted to the top. M. Muschenbroek, who embraced the contrary opinion, thought he had invalidated all M. Du Fay's proofs, by repeating his experiments with the same success, on a plane covered with sheet-lead. But to this M. Du Fay replied, that there was no occasion for supposing the vapour to rise through the lead, nor from the very spot; but, that as it arose from the adjoining open ground, the continual fluctuation of the air could not but spread it abroad; and carry it thither in its ascent. —On the other hand it has been said, that the reason why dew appears first on the lower parts of bodies, may be, that in the evening, the lower part of the atmosphere is first cooled, and consequently most disposed to part with its vapours. It seems, therefore, that the subject has not yet been fully determined by the experiments which have been made, nor indeed does it appear easy to make such as shall be perfectly decisive on the matter.

Similar to the above are the communications by *Mr. J. Bamford, Mr. Copsey, J. H. N. Mr. J. Smith, Mr. J. E. Savage,* and *Mr. R. T. jun.*

Mr. A. Hirst, of Marsden, says, dew is produced by the heat of the sun in the following manner: during a summer day the ground acquires a considerable degree of heat, which causes the more fertile and wet grounds to evaporate their moisture, which is held in solution during the heat of the sun; but if it be not carried off by the wind, part of it (at least) falls down again after sunset, on being condensed by the cold. But at the same time, the earth continues to emit vapours during the night, on account of the heat communicated to it in the day time; and this will undoubtedly be condensed on the ground as it exudes; the greater portion of the dew found on rich land is thus formed by exhalation from the earth during the night, and the remainder by the condensation of vaponr already in the atmosphere, which in still weather will fall nearly equally. We never find much dew on dry roads and pavements, except after a misty night; but we frequently see very heavy dews on fertile lands, and proportionably less on barren wastes. I have lately inverted a large tub in a fertile field for several nights, and have always found dew under it the next morning, but not in such large quantities as on the adjacent grass, where the condensed vapours from the atmosphere had liberty to fall—I have also inverted the tub during the heat of the day for a few hours, and have found dew under it whilst the sun was yet up—this dew must have exuded from the ground, as described above.

QUERY 46.

Answered by Mr. J. Baines, jun.

When Homer wrote his Iliad, all Greece was thickly enveloped in the grossest superstition. The gods and goddesses, which he describes, were believed by the Grecians to have positive existence, and the possession of those powers and authorities which he, as well as the other ancient poets, have ascribed to them. The different prayers and addresses we meet with in the Iliad, (viz. B. III. l. 371—B. VII. l. 241—B. XXIV. l. 377, &c.) are proofs of the sincerity of their belief. Now, as morality and virtue are not the produce of superstition, but the reverse, it is a fair inference, that the writer of the Iliad only meant to amuse and gratify the people.

J. H. N. (the proposer) says, long before the poetic age, the Grecians were immersed in the most gross superstition, and were deeply tinctured with idolatry, which the introduction of poetry and music, by Orpheus, tended to encrease.—Orpheus travelled into Egypt[*], where he witnessed the superstitious customs, magic rites, beclouded mysteries, and other monstrous absurdities of that idolatrous nation.—A number of these he introduced into Greece; and, for the purpose of more effectually fixing the attention of the people upon them, the aid of music and poetry, monstrous romance, and licentious fiction, were blended with their religious rites. These adventitious auxiliaries fired the minds of the multitude, and caused them to esteem and honour their authors and promoters; to follow their preposterous practices; and, to adore their imaginary divinities.—Orpheus also instituted new rites and ceremonies, of his own formation, which he taught the people; those who were initiated in them being bound to observe inviolable secresy, and, by way of distinction, were called Ορφεωτλεϛαὶ.

Musæus, Amphion (of Thebes), Metampus, &c. all near the time of Orpheus[†], endeavoured (with the aid of poetry and music) to instil superstition into the minds of the people. Indeed, the chief design of the learning then cultivated, seems to have been intended to insinuate the belief of fables among the people, and to awe and entice them into idolatry, by innumerable fictitious narratives and emblematical devices. In the succeeding ages fables still encreased, and the people became dupes to the craft and ingenuity practised upon them by the unlimited freedoms of the licentious Attic bards.

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[*] See Diodorus Sic. Bibl. lib. 1—also Pausanias.

[†] See Clemens Alexandrinus. Protreptic, p. 3.

Mr. Bamford also sent some observations on this Query.

QUERY 47.

Answered by J. B——n.

The Athanasian Creed was long supposed to have been drawn up by Athanasius, bishop of Alexandria, to justify himself against the calumnies of his Arian enemies; but it is now generally allowed, amongst the learned, not to be his. Dr. Waterland ascribes it to Hilary, bishop of Arles, for the following among other reasons:—1st, Because Honoratus of Marseilles, the writer of his life, tells us, that he composed "*an exposition of the creed;*" a more proper title for the *Athanasian* than that of creed simply, which it now bears. 2dly, Hilary was a great admirer and follower of St. Austin; and the whole composition of this creed is, in a manner, upon St. Austin's plan, both with respect to the Trinity and the Incarnation. 3dly, It is agreeable to the style of Hilary, as far as we can judge from the little that is left of his works. Upon the whole he concludes, that Hilary, bishop of Arles, about A. D. 430, composed the "Exposition of Faith," which now bears the name of the "Athanasian Creed," for the use of the clergy of the diocese of Arles: that about A. D. 570 it became so famous as to be commented upon; but that all this while, and for several years after, it had not acquired the name of "Athanasian," but was simply styled "The Catholic Faith:" that before A. D. 670 Athanasius' name was introduced to recommend it, being indeed a complete system of the

Athanasian principles. This creed, obtained in France about A. D. 850, was received in Spain and Germany about 100 years later; and we have clear proofs of its being *sung* in our churches in the 10th century. As to the matter of this creed, it is given as a summary of the true orthodox faith, and a condemnation of all heresies, ancient and modern. Unhappily, however, it has proved a fruitful source of unprofitable controversy and unchristian animosity, even down to the present time. And indeed no better consequences could be expected from a human composition expressed in such strong, uncharitable, and unscriptural terms, upon a doctrine acknowledged on all hands to be incomprehensible.

Answered by Mr. D. Copsey.

Athanasius was a native of Alexandria, of which he was afterwards chosen bishop A. D. 326. He was a strenuous opponent of the Arians, by whom he was greatly persecuted: he assisted at the Council of Nice, under Julius, A. D. 336, where the heresy of Arius was condemned, and the confession, known by the name of the Nicene Creed, drawn up. In 360 he addressed a letter to the Emperor Jovian, in which he proposed that the Nicene Creed should be the standard of the orthodox faith. The creed, commonly called the Athanasian Creed, is said by some to have been drawn up by him in the fourth century, to justify himself against the calumnies of his Arian enemies; though others ascribe it to Hilary, bishop of Arles.—In Math. Prideaux's Introduction to History, it is said to have been made at the council spoken of above, and put among their records; whence it was afterwards taken out and published, to be generally received of the church. (Prideaux on reading History, sect. 4. p. 77.) At the end of the section he subjoins an enquiry, whether the Athanasian Creed depends on the records of Rome? whence it was set forth long after the framing of it, in the time of Pope Julius. (Ibid. p. 82.) This creed, I believe, is not generally read by the clergy, though subscribed to in the Articles, and commanded by the Rubric. Archbishop Tillotson's opinion on it was, that the Liturgy would not be injured by its omission.

J. H. N. (the proposer) says, "As the creed called Athanasius' is not found in any of his works, and as he, as well as his contemporaries, generally refer to the creed of the Council of Nice, it is commonly agreed that he was not the author or framer of it. It first became known in the 8th century, and was given out as the creed of Athanasius. Where, or by whom, it was composed, is unknown.

"With respect to the expressions, that 'whoever will be saved must believe it;' that 'the belief of it is necessary to salvation;' and that 'such as do not hold it pure and undefiled, shall perish everlastingly,' &c.; some divines say, that it is not every separate expression in the creed that is meant, but that it is the Christian Faith in general, and that the import is the absolute necessity of believing the Christian Religion. Others say, that the condemnatory expressions, only relate to those who have resolutely rejected and derided all religious instruction offered to them; who have stifled their own convictions; rejected and denied the doctrine of the Trinity, the divinity of Christ, and the inefficacy of the atonement. Others say, that it does not extend to any, but those who have had constant convictions and strivings of the Holy Spirit, and have as constantly hardened themselves against it; and does not affect those who have not had sufficient light to be able to comprehend the truths of the Gospel. These are some of the illustrations that the clergy put upon the damnatory sentences in St. Athanasius' Creed; but all modifications of this nature seem to be mere prevaricating subterfuges, to render elaborate harshness palatable and tolerable, and to cloak the most odious and unscriptural doctrines. Of this opinion have been several luminaries of the church of England, particularly that great and good man, Archbishop Tillotson, who in a letter written to an eminent prelate of his time, dated October 23, 1694, says, 'The account given of St. Athanasius' Creed seems to me in nowise satisfactory; I wish we were well rid of it.'"

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Answered by Mr. J. Smith, of Alton Park.

It is now generally understood, that St. Athanasius was not the composer of the creed which bears his name. It has been ascribed, with apparent probability, to Vigilius Tapsensis, an African bishop, who lived in the century immediately succeeding that in which St. Athanasius flourished. The sense in which the clergy generally understand the damnatory clauses in this creed, I cannot precisely determine.

A similar opinion was expressed by *Mr. J. Baines, jun.*

Mr. J. E. Savage says, " The creed in question was certainly composed by St. Athanasius;" but does not quote his authority, or adduce any argument in support of his opinion.

Mr. Jos. Bamford does not decide on the question, but seems inclined to the opinion that St. Athanasius wrote the creed in question; and says, that the clauses referred to are generally understood by the clergy in their literal sense.

QUERY 48.

Mr. J. Baines, jun. says, " Edward III. in 1340 introduced the motto '*Dieu et mon droit,*' *i. e.* 'God and my right,' when he assumed the arms and title of King of France."

Mr. Jos. Bamford observes, " mottoes must be very ancient, even as old as heraldry; for we are told in the 2d chapter of Numbers, that the Israelites had their particular standard for each tribe; and, no doubt, their different mottoes."

Answered by J. H. N. near Leeds.

It was customary among the ancient German warriors, to carry their arms with them; to the senate as well as to the camp. The shield was more prized than the sword; and to leave it in battle, was to incur indelible disgrace and pusillanimity. Ambitious to make their shields conspicuous, they rudely carved their various heroic achievements upon them; and when they rushed into battle, they repeated a short sentence, and, for the purpose of making a sonorous swell, applied the shield to their mouths. These sentences, or cries, were supposed to strike terror on the enemy, and to incite their own troops to valour. A great number of different cries were in use amongst them. "Deus adjura" and "Deus vult" were the famous cries of those enthusiastic adventurer, who engaged in the wonderful and calamitous expeditions called the Crusades. "Dieu et les Dames" was the cry of the Knights, whose gallantry led them to the most desperate feats of agility and courage, to win the applauses of their favourite females, and be considered as the avengers of injured innocence. The cry of every Banneret was engraved on his shield, as emblematic of his valour, his good qualities, or those of his progenitors; and they have ever since been continued in the complicated system of Heraldry.

The word Motto is derived from the Greek Μυθος, *a short quotation.*

QUERY 49.

Answered by Mr. J. Baines, jun.

Air bubbles are formed by a thin covering of water inclosing a quantity of air. The air presses upwards and the water downwards, and form a spherical surface, the pressure of the water being equally diffused and equally distant from the centre of the sphere; because all bodies, when in a fluid state, invariably assume that form, by the great power of attraction which the Creator has stamped on all matter in the universe. If air bubbles are not perfect spheres, it is because the lower segment, by being immersed in the water, is either destroyed or imperceptible.

Mr. Bamford's solution was similar in substance.

Mr. M. Harrison observes, "If water or any other fluid be greatly agitated, atmospheric air is driven into it; and the specific gravity of air being above 800 times lighter than water, the air rises to the surface, and buoys up a few particles of the fluid; and being cased round by these particles, it forms bubbles, which for a small time assume the form of the upper segment of a sphere, until the elasticity of the air so confined bursts them."

Mr. A. Hirst says, "when an air bubble is formed, it assumes a spherical shape on account of the attraction of the particles of the fluid, a sphere being the most capacious of any solid of the same surface; and it is proved in the solution to Quest. 46, p. 226, Vol. II. Enquirer, that the most capacious segment of a sphere with the same curve surface, is, when the height is three-fourths of the diameter; which form, in air bubbles, is not uncommon, abstracting a little for the weight of the fluid composing the bubble, which will necessarily make the height something less than three-fourths of the whole diameter."

Mr. J. E. Savage also sent a solution.

QUERY 50.

Answered by Mr. A. Hirst.

Iron, after having been rendered soft by heating, will, in length of time, become very hard again, by being exposed to the atmosphere, and the time required to harden it will be in proportion to the size of its particles; that is, a small piece of iron sooner becomes hard again than a larger one; and it is most probable, from the query, that this is the case with brass, though not in so great a degree; for if brass be heated, it is rendered softer, whether it be suddenly quenched or not, but the less so, if it be suddenly quenched; which strengthens the above conjecture.

Mr. J. E. Savage says, "It is obvious that the brass filings will take a longer time to melt than the same weight in a lump; because the caloric will escape from the filings, but in the lump it cannot, neither can the air act so freely within it."

Mr. John Smith observes, that "the fusion of metals is accomplished by the action of caloric, which, by combining with the solid substances, diminishes or destroys the attractive force of their particles, and causes them to pass into the fluid state. Now it is well known that solid metal is more permeable to caloric, or, in other words, is a better conductor of heat than filings are; it will, consequently, fuse with greater facility."

Mr. Bamford and *Mr. Baines* expressed similar opinions.

Mr. R. T. jun. says, "I suppose that brass in lump will fuse in less time than the same in filings; for this reason, caloric is able to pervade all bodies, and in proportion as bodies are good or bad conductors of electricity, are they good or bad conductors of caloric; and the more light and porous a body is, the worse conductor it is. Now brass filings occupy a greater space than brass in lump; of course, the interstices of the filings are occupied by atmospheric air, which is a worse conductor of caloric than metals are, of course prevents it from so soon coming into fusion. Also, matter of every description is regulated by attraction and repulsion, and fluidity is supposed to be an alteration in the situation of the particles of a body; now in the filings, the caloric requires a longer time to exert its repulsive force, to overcome the cohesive attraction of the metal; and this is, in my opinion, the answer to the query.

*Mr. John Nowell**, *of Farnley Wood, near Huddersfield,* refers to the Theory which he proposed in his solution to the 32d Query (see p. 195, Vol. II. Enquirer) for an answer to this query.

QUERY 51.

Mr. M. Phoston gives the two following methods, extracted from the Monthly Magazine, Vol. XXXIII. p. 426 :—

A Process for purifying Fish Oil.—Take one gallon of crude stinking oil, and put to it a pint of water, poured off from two ounces of lime slacked in the air; stir the mixture up several times for the first twenty-four hours; then let it stand a day, and the lime-water will sink below the oil, which must be carefully separated from it.

Another Method for purifying it more completely.—Take one gallon of crude stinking oil, and mix with it a quarter of an ounce of powdered chalk, a quarter of an ounce of lime slacked in the air, and half a pint of water; stir them together, and when they have stood some hours, add a pint of water and two ounces of pearl ashes, and place the mixture over a fire that will just keep it simmering, till the oil appears of a light amber colour, and has lost all smell, except a hot, greasy, soap-like scent: then superadd half a pint of water, in which one ounce of salt has been dissolved, and having boiled it half an hour, pour the mixture into a proper vessel, and let it stand for some days, till the oil and water separate. If this operation be repeated several times, diminishing each time the quantity of ingredients one-half, the oil may be brought to a very light colour, and rendered equally sweet with the common spermaceti oil.

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* This ingenious Gentleman informs us, that after a series of laborious experiments, he has at length decomposed the muriatic acid. The result of his experiments will shortly be laid before the public.—*Ed.*

Oil purified in this manner, is found to burn much better, and to answer much better the purposes of the woollen manufacture. If oil be wanted thicker and more unctuous, it may be rendered so by the addition of tallow or fat.

Mr. Jos. Bamford communicated a method similar to the above; and adds, a patent was granted in 1796 to Mr. Collier, for a chemical process for freeing fish-oils from their impurities of smell, taste, and colour; which process was as follows:—Pour a quantity of fish-oil into a vessel which is heated to the temperature of 110 or 120 degrees of Fahrenheit's thermometer, when a portion of caustic mineral alkali is added, the weight of which is equal to four parts to the hundred of the oil. The mixture is next agitated, and after the sediment and salt have subsided, it is drawn off into another vessel, containing a sufficient quantity of finely pulverized fresh-burnt charcoal, and a small proportion of diluted sulphuric acid; the agitation is repeated, and when the coal, together with the saline and aqueous particles, have subsided, the oil is passed through certain strainers, and thus rendered perfectly transparent and fit for use. (For a more particular description see 10th vol. of the Repertory of Arts, &c.)

QUERY 52.

Answered by Mr. John Nowell (the Proposer).

Prussic acid holds potash or soda in a state of combination in a very feeble degree; even the weakest of acids, the carbonic, is capable of decomposing these salts, and forming a carbonate with their respective bases. There is a triple salt of prussic acid, potash, and iron, much used as a test, and long since known by the name of Prussian alkali: this substance precipitates all the oxides of iron in coloured precipitates, depening on the degree of oxidation, and is still capable of holding a limited portion of the same oxidein solution. A very curious fact; to attempt to explain the rationale would ill become me, as it resisted the sagacity of so eminent a chemist as M. Proust. If from this trinary combination, or as it is called the triple prussiate of potash and iron, we could take the iron contained in a state of dissolution, its fixity and utility as a re-agent would be destroyed, and the carbonic acid of the atmosphere would in a certain degree decompose the salt if the bottle was not well corked, drive off the acid, and combine with the base. Hence the proneness of the simple prussiate to decomposition: but if potash holds the prussic acid with a weak affinity, the case is not so with iron; it holds it with a strong one, and in fact is capable of taking it from its strongest combinations. Upon this datum we may frame a theory, which will account for the fact expressed in the query. We will suppose the triple prussiate made up of atoms arranged with particular symmetry; one atom of the salt we will suppose is prussic acid, another potash, and a third iron: now the attraction of the iron will be extended when so minutely divided, even past the sphere of action of the potash; and if, by combination of the base with carbonic acid, the prussic acid of the triple prussiate had a tendency to fly off, the superior attraction of the iron would hold it and check its flight.

J. H. N. near Leeds, says, "though the prussic acid may unite with alkalies, it is in so inconsiderable a degree as not to destroy their natural qualities; so that the salt formed by the combination of this acid with potash will consequently be prone to decomposition: but as iron in solution is oxidated by alkaline substances, the affinity which the prussic acid has for metallic oxides may be the cause of its combination; or it may be caused by the iron absorbing the carbonic acid from the potash; or, both these causes may conspire to form the commixture in question: but that either or both of them do, I am not able positively to determine."

Mr. Joshua Bamford and *Mr. R. T. jun.* also gave solutions.

QUERY 53.

Answered by Mr. J. Baines, jun.

Whether the atmosphere of the ante-diluvian world was similar to the post-diluvian one, or not, appears to me rather doubtful. There are sentences in the Holy Scripture which seem to suggest an opinion that it was not. "And God divided the waters which were under the firmament from the waters which were above the firmament. (Gen. i. 7.) "For the Lord God had not caused it to rain upon the earth." "But there went up a mist from the earth, and watered the whole face of the ground." (Gen. ii. 5, 6.) And at the commencement of the Flood: "The windows of heaven were opened," (Gen. vii. 11.) that is, "the water above the firmament" fell upon the earth and drowned it. We have no mention in Scripture of rain falling, until Gen. vii. 4, when Noah and his family were about to enter the ark: "For yet seven days, and I will cause it to rain upon the earth." If, then, there was no rain before the Flood, there could be no rainbow.

Mr. D. Copsey observes, that "the beautiful phænomenon, the rainbow, is well known to be occasioned by the reflection of the rays of the sun from the drops of falling rain; but we are not to deduce from this, that the appearance was as common before the flood as now; for if that had been the case, we should not have found its appearance propounded in the Scriptures (Gen. ix. 13. 17.) as a token of the covenant between God and all living creatures, in which he engaged that the earth should no more be destroyed by a flood. If Mr. Allen will turn to the fifth and sixth verses of the second chapter of Genesis, he will find that rain was *then* unknown on the earth, and *the whole face of the ground* is said to have been watered by a mist. Now as there is no mention of any rain having fallen until the deluge, I think it may be justly inferred that it was altogether unknown, before the period when that dreadful judgment was inflicted."

Mr. Hirst says, "For my part I can see no reason why the rainbow should not appear as well before the flood as after, except that the atmosphere of the antediluvians was so rare as not to be able to support any clouds; but this is a point of physics which cannot be determined, and it would be useless to enlarge upon it; though many philosophers are of opinion that the atmosphere was much purer before the flood than since; and instance, in proof thereof, the longevity of the antediluvians.

J. H. N. near Leeds says, "The rainbow being the natural effect, of a cause likewise natural, it seems rational to suppose that it was as common before the flood as in our day. It does not appear from the Scriptures that the rainbow was created purposely as a pledge; but that which was then made, or rather that which was an effect of causes before created, should be considered by Noah, and all future generations, as a token of their preservation from a flood which might destroy the earth.

The sense in which it is to be understood, as a pledge, may perhaps be,—that so long as the sun and atmosphere continue to perform the effects for which they were created, so long as rays of light shall be reflected and refracted by passing through other bodies, so long as rain shall water and refresh the earth, so long as nature shall endure—even so long shall the rainbow be considered as a pledge that the world shall be no more destroyed by water.

Mr. J. E. Savage, in a communication on this query, says, "When the rain is general there can be no rainbow; as often therefore as we see this beautiful phenomenon, we may conclude, with certainty, that we need not fear another deluge; for to effect one, there must be a violent rain from all parts of the heavens at once. There can be no doubt but that the rainbow appeared before the flood; but, after that event, it was made a particular pledge, between God and Noah, for the fulfilment of the promise, that the earth should be no more destroyed by water."

Mr. John Smith says, "It has been inferred, from the great age to which the antediluvians arrived, that the atmosphere was very different before the flood from what it has been since. Granting this to have been the case, may we not suggest, as a probable conjecture, that prior to that event there was no rain? Some have contended that the rainbow must have appeared in the antediluvian world; but the tenour of the Almighty's declaration to Noah evidently implies that it was a phænomenon, which, before the deluge, the patriarch had never seen."

Mr. Bamford also answered this query.

QUERY 54.

Answered by Mr. Baines.

It appears from Professor Hutton's account of the strength and stress of beams, that if a beam laying parallel to the horizon, and supported at each end, be cut into equal parts by a section parallel to the horizon; the strength of each half separately, remaining in the same position as before it was cut, is only one quarter of the strength of the whole beam; Hutton's Course, vol. II. art. 248, corol. 5. On what foundation, then, stands the carpenter's assertion? at all events, the beam can be no stronger when bolted together again.

Mr. Joseph Bamford observes, "When the beam is cut down the middle, and the ends reversed, it must be stronger than before; as the ends nearest the root are at the contrary sides of the building, and these ends being older than the top end, must be able to bear more weight."

Mr. A. Hirst says, "If a piece of timber tapers very much, its strength will be rendered more uniform by slitting and reversing the ends; but if it be every where of the same strength, the idea of slitting and bolting together again to increase the strength is very erroneous; as so far from this being the case, it must certainly be weaker, because the part taken away by the saw was stronger than any other section of the beam (in round timber the middle section being the deepest); besides this, the bolt holes must cut a great number of the fibres of the wood, which will also impair the strength. For these two reasons the beam must be weakened; and I am at a loss to imagine what arguments can be adduced to prove that it is strengthened by this operation."

QUERIES PROPOSED FOR DISCUSSION

IN THE EIGHTH AND SUCCEEDING NUMBERS.

1 Qu. (55) *By Mr. M. Harrison, Crosland, near Huddersfield.*

What motive, or intention, have brewers for boiling their wort previous to its fermentation?

2 Qu. (56) *By Mr. J. Baines, jun. Horbury Bridge, near Wakefield.*

What becomes of the cuckow after it gives over singing in this country; does it migrate further to the north, remain mute here, or return again to the south?

3 Qu. (57) *By the same.*

How are we to understand Gen. vi. 2. respecting the "sons of God" and the "daughters of men?"

4 Qu. (58) *By Mr. John Nowell, Farnley Wood, near Huddersfield.*

The sulphuric acid often adheres to the malic, from some accident in the preparation of the latter: required a process for removing the sulphuric completely, without leaving any other acid in solution.

5 Qu. (59) *By the same.*

Iron is precipitated by the triple prussiate of potash and iron (which is a combination of the prussic acid, potash, and iron), in the form of beautiful coloured precipitates, depending on the different degrees of oxidation: if so, how does it happen that the triple prussiate holds a quantity in solution, without a precipitation taking place?

6 Qu. (60) *By Mr. E. S. Eyres, Liverpool.*

Required the easiest and quickest method of producing azotic or nitrogen gas, in the greatest state of purity.

7 Qu. (61) *By Mr. J. B——n, London.*

Is the following position of Rousseau tenable? "Take from the learned the pleasure of being heard, and their love of knowledge would vanish. They do not study to obtain wisdom, but the reputation of it: philosophy would have no charms, if the philosophers had no admirers."

8 Qu. (62) *By Mr. M. Phoston.*

Required the reason why paper becomes transparent by being oiled?

9 Qu. (63) *By Mr. D. Copsey, Bocking.*

Do swallows and martins migrate, or lie torpid, during the winter?

10 Qu. (64) *By Mr. J. B——n, London.*

What is meant by the following passage in Judges, chap. ix. ver. 45, "And Abimilech beat down the city (Shechem), *and sowed it with salt?*

11 Qu. (65) *By J. H. N. near Leeds.*

In what age and nation was the science of medicine first practised by regular physicians?

12 Qu. (66) *By Mr. J. E. Savage, Surfleet.*

Required the origin of the terms whig and tory.

ORIGINAL POETRY.

THE LADY ROSE.

BY HENRY SUMMERSETT.

" Sing, ancient bard, the song of sorrow;
I may not hear thy harp to-morrow!
Sing, ancient bard, my Harold's praise,
Bright, but not many, were his days;
Thou knew'st the warrior's virtues well,
Say how he lov'd, and fought, and fell!
The boy upon the widow's knee
Will smile to hear thy minstrelsy,
And act a blissful angel's part
On his poor mother's breaking heart.
Thou knew'st the warrior's virtues well;
Say how he lov'd, and fought, and fell!"
Old Hubert dash'd a tear away;
The lady said,—" Play, minstrel, play;
Thou shalt not hear me heave a sigh,
There is no fountain in mine eye;
Sing, ancient bard, the song of sorrow,
I may not hear thy harp to-morrow!"
Drooping and sad, with trembling hand,
He touch'd the wires at her command:
Wild were the notes; the rosy boy
Held up his little hands with joy;
The widow strain'd him to her breast,
The pillow of his nightly rest,
And then a wandering look she gave,
And said,—" Thy father's in the grave!
Lost, lost, my blessed hope, to thee,
Lost, lost, my smiling babe, to me,
To friendship, love, and earthly minstrelsy!
" But there are harps in Heaven!"—Began,
With gathering strength, the ancient man:
" Sweet is the voice of seraphim,
Pouring the joyous praise of *Him*
Who to the son of virtue says,
Heed not the shortness of thy days

On earth, for thou wilt find with me
The raptures of eternity!
Has Harold left his precious love,
And are they not to meet again?
Hark, lady, hark! I hear above,
An angel's voice, an angel's strain:
It is mine honour'd lord's; and see!
He drops the veil of mystery;
Smiling on Rose, he stands:
No angry storms his breast invade,
He comes not like a gloomy shade;
Lo! now he lifts his hands.
O, son of light! with holy joy,
I see thee bless thy wife and infant boy!
The warrior speaks; hark, lady, hark!
'My Rose, why are thy thoughts so dark!
Why suffer grief to overthrow
Thy noble mind? Why nourish woe?
The worm that eats the human heart:
O, mournful dove! one smile impart;
A smile like that which deck'd thy cheek,
When first thou heard'st thy Harold speak
Of love, and all its witching powers,
And breath'd a tremulous vow, that made
Holy, wild Ruthen's mountain shade,
And gave more sweetness to the honied flowers.
Why are thy thoughts so dark, my Rose?
Let our dear boy dispel thy woes
With his soft smiles; such smiles, in Heaven,
Are by the glowing cherubs given
To those fond mothers, now on high,
Who nurs'd their tender infancy.
Wherefore that look of strong despair,
The fearful gathering of thine eye?
Why load thy snowy breast with care,
And wildly wish to die?
There is a stillness in thy grief
That fills the soul with dread.
Woman of misery!
The body of wild Ruthen's chief
Lies calmly with the honour'd dead,
His soul is now with thee.

He comes a soother to his Rose,
But hark! the signal's given!
The parting clouds, my love, disclose
The moonlight realms of Heaven.
Mourn not the warrior's doom,
He died the death of glory!
None will tell his story
With mockery o'er his tomb;
None will curse the memory
Of him who liv'd in love and charity.
The soldier, in the hour of death,
The soldier, with his latest breath,
Will bless the partner of his bed,
And faintly raise his swimming head,
To send an holy prayer on high,
For his dear wife and progeny.
Yes, the true soldier will extend
His hand, and say, Farewell, my friend,
E'en to his conqueror, stain'd with gore,
Who murmurs, We are foes no more!
Smile, widow of wild Ruthen's chief;
The blast demands the yellow leaf:
Braving the storm and icy rain,
The tree is greenly deck'd again.
To Harold is assurance given
That he shall meet his Rose in Heaven!
There, with the smile of chasten'd joy,
May Harold's arms enfold his boy!
Near us shall old Hubert stand,
And sweep, with plastic hand,
A richer harp, and send on high
The song of sweet solemnity;
Happy the souls of those who happy die!'"
Entranc'd the minstrel gaz'd: the boy
Play'd with the streaming hair
Of Rose, once Ruthen's pride and joy,
Now shuddering with despair.
Low sank her head; a fearful sigh
Rous'd Hubert from his ecstasy:
Trembling, her senseless hand he press'd,
The dreadful stillness of her breast—

The closing eye—the ashy cheek—
"My lady dear! my mistress, speak!
Ah, sight of misery and grief!
Descend again, wild Ruthen's chief;
The fatal blow of death is given,
Descend, and bear thy wife to Heaven!"
The old man, terrified and wild,
Rais'd the dear unconscious child,
Whose rosy face was closely press'd
To his dead mother's freezing breast.
With visage wan and eye aghast,
The beauteous corse he hurried past;
The little orphan then he bore
With anguish through the corridor,
And soon the mournful cry was spread,
Ruthen's sweet flower, the Lady Rose is dead!

STANZAS WRITTEN AT SEA.

BY MARIANNE MEGGETT.

Oft on the lonely deck I've stood,
At evening's still and silent hour;
Mark'd the last sun-beams on the flood,
Which closes day's warm genial power,

Then have I mourn'd, with anguish keen,
That thus the days of youth fleet by;
Full soon the clouds of care are seen
To draw the retrospective sigh.

While thus I mused, the red-arch'd moon
Peep'd o'er the ocean's distant verge;
And, rising slow, its splendor soon
Tipp'd the white sail of yon proud barge.

And as the waves in gentle swell
Heave as the breezes o'er them sweep;
Its pale light on their curl'd tops fell,
And sparkled o'er th' expansive deep.

Then has my soul with joy confess'd,
That though the warmth of youth decays,
Yet Providence has kindly bless'd
Our age with more congenial rays.

While leaning o'er the vessel's side,
As the ship cuts the glassy sea;
I've watch'd the sparkles as they glide,
And thought on friends now far from me.

Now midnight's awful gloom was spread;
The seamen change of watch proclaim;
The deep-mouth'd heavings of the lead,
And noisy billows, chill'd my frame.

But now to chase the dismal scene,
Behold from far, young morning peep,
And on the ocean's briny green
Behold the vessels cut the deep.

See from that cloud the gay sun break:
He chases every midnight damp;
The busy crew are all on deck,
Warm'd by Aurora's blazing lamp.

Joy fills my heart, all sorrow flies;
Farewell the shades and damps of night,
So shall the blessed morn arise
O'er death's dark shades in splendor bright.

THE NIGHTSHADE,

BY MARIANNE MEGGETT.

List not to Pleasure's luring voice,
Who courts thee to her silken breast;
Who strews with flowers the path to vice,
And tells thee 'tis the path to rest.

When you the rose's sweets would smell,
Beware the thorns which lurk below;
But, oh! believe me, when I tell,
How thorns beneath gay pleasures grow.

Fly ere you prove its baneful power;
Be wise and shun th' insidious bait,
For pleasure is a poisonous flower,
Which cropt will bring remorse too late.

One morn a boy who lov'd to roam,
Along the meadows took his way,
The vagrant wander'd far from home,
And playful pass'd the joyous day.

As near a hedge he sauntering stroll'd,
He saw a Nightshade blooming gay,
With flowers of purple and of gold,
And fruit that flam'd the ruby's ray.

Joy seiz'd the youth, he pull'd them straight,
And eat the fruit, and smelt the flowers;
But, oh! he knew not, till too late,
The fatal berries' subtle powers.

By his example warn'd, beware,
Lest you the same sad fate should meet;
Pursuing pleasure, dread the snare,
That's spread to catch thy wareless feet.

REFLECTIONS

ON SEEING A LAMB THAT WAS FATTENING FOR SLAUGHTER.

WANDERING through the mazy wild,
By stormy winds and tempests shaken,
'Tis oft the fate of nature's child,
On dubious points, to be mistaken.

When skipping o'er the verdant fields,
No anxious doubts thy peacedestroy;
Thy mother every comfort yields,
And every skip is fraught with joy.

Yet one short month, and thou art gone,
Thy every joy, and every good,
But thou wilt skip till life is done,
And lick the hand that sheds thy blood.

Unmindful of impending fate,
Thy present blessings make thee smile;
No friend to love, no foe to hate,
No future hopes thy bliss beguile.

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In life's gay morn, what joys are ours!
We skip and dance, and laugh and play;
In blissful mirth we pass those hours,
That sometimes last the live-long day.

Let us the present moments seize;
This wisdom bids, and reason grants;
Nor mind what future fate decrees,
But trust in him who knows our wants.

Father, supreme! thy mercies send,
We over death have no control,
But thou art kind;—my ways I'll wend,
Where no vain doubts afflict the soul.

Though I nor fear, nor wish to die,
My wayward thoughts will sometimes roam;—
Thy mercy bids me death defy,
Yet live, till thou shalt call me home.

Boston, Feb. 1812. W. M.

EPITAPH

IN ALGARKIRK CHURCH, NEAR BOSTON, LINCOLNSHIRE, ON JOHN BERIDGE, M.B. OBIIT OCT. 17, 1788.

These hallow'd stones an English heart infold,
Warm, tender, steady, simple, just, and bold
A Christian who obey'd his Saviour's law,
To man with charity, to God with awe;
—This tribute, *Beridge!* to thy tomb is due,
Pure as thy virtues, as thy friendship true.

WILLIAM HAYLEY.

LINES WRITTEN ON THE SEA-COAST.

Swift approaching to the main,
See the sparkling northern crown;
And Arcturus' frozen wain,
The dark blue vault is hast'ning down.

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Flaming on the verge of heav'n,
Proud Orion seeks the deep;
He the rampant Bull has driv'n
Headlong down the azure steep.

Luna half her course has run,
Swift through ether, riding high;—
How she from her silver throne
Lords it o'er the subject sky!

See her lightly flitting beams
On the curling wave-tops play;
While each star more dimly gleams,
Dwindling in the mimic day.

From his wonted fall and flow,
Enraptur'd Ocean seems to rest,
And the crescent queen to woo,—
See her pictured on his breast.

Hark! what sounds thus float on air?
Softly sweet their cadence close;
They advent'rous rashly dare
Rouse all nature's soft repose!

'Tis the waves that breaking flow
O'er yon rock with sullen roar;
Then recede in circles slow,
Bubbling on the sandy shore.

When such a scene before us lies,
The wrapt soul quits this mortal clod,
And on the wings of fancy flies
" From nature up to nature's God."

Leeds. I. X.

HUMANITY.

Ah me! how little knows the human heart
The pleasing task of soft'ning others' woe;
Stranger to joys that pity can impart,
And tears, sweet sympathy can teach to flow.

Pity the man who hears the moving tale
  Unmov'd; to whom the heartfelt glow's unknown,
On whom the widows' plaints could ne'er prevail,
  Nor made the good man's injur'd cause his own.

The splendid dome, the vaulted roof to rear,
  The glare and pride of pomp be, grandeur, thine:
To wipe from misery's eye the falling tear,
  And soothe th' oppressed orphan's woe be mine.

Be mine the blush of modest worth to spare,
  To change to smiles affliction's rising sigh:
The kindred warmth of charity to share,
  Till joy shall sparkle from the tear-fill'd eye.

Can the loud laugh, the mirth-inspiring bowl,
  The dance, or choral song, or jocund glee,
Affect the glowing, sympathizing soul,
  Or warm the breast, HUMANITY, like thee?

M. P.

Mathematical Department.

MATHEMATICAL QUESTIONS

IN NO. V. ANSWERED.

1. QU. (56) *Answered by Mr. E. Webster, Armley-Mills.*

LET x^2, $25x^2$, and $49x^2$, be the numbers required; then by the question, their common diff. $24x^2$ is to be a cube number, let nx be its root, then $24x^2 = x^3 n^3$, and $x = \frac{24}{n^3}$; if $n = 2$, we find $x = 3$, consequently 9, 225 and 441 are the numbers required.

It was answered exactly in the same manner by Messrs. *Gawthorp*, *Hirst*, *Rylando*, and *Whitley*; and nearly so by Messrs. *Baines*, *Brooke*, *Butterworth*, *Cattrall*, *Cummins*, *Dunn*, *Eyres*, *W. Harrison*, Burton Pidsea, *Hine*, *Maffett*, *Nesbit*, *Putsey*, *Tomlinson*, and *Winward*.

2. Qu. (57) *Answered by Messrs. Baines, Brooke, and Whitley.*

Let x^{12} denote the required number, then its square, cube, and biquadrate roots are respectively x^6, x^4, and x^3, and by the question, $x^6 + x^3 = 2x^4$; hence $x^3 - 2x + 1 = 0$. One root of this equation is evidently 1, and dividing by $x - 1$, we have $x^2 + x - 1 = 0$, therefore $x = \frac{\sqrt{5} - 1}{2}$, and the number required is $\left(\frac{\sqrt{5} - 1}{2}\right)^{12} = 161 - 72\sqrt{5}$, whose square root is $9 - 4\sqrt{5}$, its cube root $\frac{7 - 3\sqrt{5}}{2}$ and its biquadrate root $\sqrt{5} - 2$. These roots form an arithmetical progression whose common diff. is $\frac{5\sqrt{5} - 11}{2}$.

And thus nearly it was answered by Messrs. *Butterworth*, *Cattrall*, *Cummins*, *Eyres*, *Gawthorp*, *W. Harrison*, *Hine*, *Hirst*, *Maffett*, *Nesbit*, *Putsey*, *Rylando*, *Tomlinson*, *Webster*, and *Winward*.

3. Qu. (58) *Answered by Messrs. Cattrall, Cummins, Gawthorp, Hine, Maffett, Nesbitt, Rylando, and Winward.*

Put x for the perpendicular, y the hypothenuse, and $g = 16\frac{1}{12}$ feet: then by art. 300 Marrat's Mechanics, a body descending down y in the time t, will describe the space $\frac{gt^2x}{y}$, which, in this case, is $= y$, therefore $y^2 = gt^2x$, and the base is $= \sqrt{(gt^2x - x^2)}$. But the sum of the sides less the hypotheneuse is equal to the diameter of the inscribed circle; that is $\sqrt{(gt^2x - x^2)} - \sqrt{gt^2x} + x = 4$;—when $t = 1''$, we have $\sqrt{(gx - x^2)} - \sqrt{gx} + x = 4$, from whence $x = 14.52$, then $y = 15.2816$, and the base $= 4.7622$.

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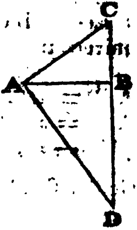
Again, by Messrs. Baines, Brooke, Butterworth, Eyres, Putsey, Webster, and Whitley.



In the annexed fig. let A C $= x$, $16\frac{1}{12} = g$, and the diameter of the inscribed circle $= 4$. Draw A D perp. to A C, meeting B C produced in D, then by art. 301 Marrat's Mechanics the time down A C = time down C D, therefore the time down C D = 1″ and consequently C D = $16\frac{1}{12}$ feet. Now B C $= \frac{x^2}{g}$, and A B $= \sqrt{\left(x^2 - \frac{x^4}{g^2}\right)} = \frac{x}{a}\sqrt{(a^2 - x^2)}$; also by a known property of right angled triangles A B + B C = A C + 4; therefore, A B $= x + 4 - \frac{x^2}{g} = \frac{x}{a}\sqrt{(a^2 - x^2)}$ as above, and, by reduction, $x^4 - g x^3 - 4 g x^2 + 4 g^2 x + 8 g^2 = 0$, or in numbers $x^4 - 16\frac{1}{12} x^3 - 64\frac{1}{3} x^2 - 1034\frac{25}{36} x + 2069\frac{7}{18} = 0$; whence $x = 9.90725 =$ A C; then B C $= 6.1028$ and A B $=$ 7 80445.

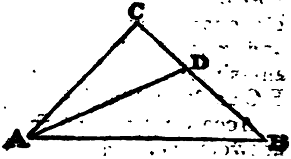
The numbers in the first of the above solutions appear to be correct, but we have not time to examine those in the second. The opinion of our correspondents is requested for the next Number of the Enquirer.

4. Qu. (59) *Answered by Messrs. Hirst and Whitley.*

Denoting the roots of the required squares by x and $\frac{1}{4} - x$, the two first conditions are answered, and we have only to make $x^2 + (\frac{1}{4} - x)^2 = \frac{1}{16} - \frac{1}{2} x + 2x^2$ a square; equate it with $(\frac{1}{4} - n x)^2 = \frac{1}{16} - \frac{1}{2} n x + n^2 x^2$, and we have $x = \dfrac{n - 1}{2n^2 - 4}$ where n is indeterminate. Let $n = 3$, then $x = \frac{1}{7}$, and the required squares are $\frac{16}{784}$ and $\frac{9}{784}$.

Nearly in the same manner it was answered by Messrs. *Baines*, *Brooke*, *Butterworth*, *Cummins*, *Eyres*, *Gawthorp, Hine, Maffett, Nesbit, Putsey, Rylando, Webster, Tomlinson,* and *Winward.*

5. Qu. (60) *Answered by M. M.*



Let ABC be the required triangle, and AD the bisecting line. Put AB $= a$, AD $= b$, and AC $= x$; then, CD $= \sqrt{(b^2 - x^2)}$, and by Leslie's Geom. 6. 11. $\frac{a}{x}\sqrt{(b^2 - x^2)}$ = DB; also 6.21. *ibid.* $\frac{a}{x} \times (b^2 - x^2) + b^2 = a x$, that is $2x^2 - \frac{b^2}{a}x = b^2$, or, in numbers, $x^2 - 32x = 3200$; whence $x = 74.78775$, and the area $= 248a$. Or. $37\frac{1}{2}p$.

Again, by Messrs. Gawthorp and Hirst.

Put AB $= 100 = a$, AD $= 80 = b$, and cos. ∠ CAD $= x$, then AC $= bx$; and Em. Trig. p. 105, edit. 2d, $2abx : ab + b^2x :: 1 : x$; therefore, $2abx^2 = ab + b^2x$, from whence $x = \frac{1}{5} + \sqrt{\frac{27}{50}} = .9348469$, then $bx = 74.7877$, and the area of the field $= 248a$. Or. $37\frac{1}{2}p$.

The same, by Messrs. Hine, Maffett, and Winward.

Put AB $= a$, AD $= c$, and AC $= x$; then, by trigonometry, $\frac{x}{a} =$ sin. B. to rad. 1 = cos. CAB, and $\frac{x}{c} =$ sin. CDA = cos. CAD; also sin. DAC $= \frac{\sqrt{(c^2 - x^2)}}{c^2}$ and cos. 2DAC $= \frac{x^2}{c^2} - \frac{c^2 - x^2}{c^2} = \frac{2x^2 - c^2}{c^2}$ (Trig. de la Croix, p. 29), therefore $\frac{x}{a} = \frac{2x^2 - c^2}{c^2}$; which reduced, in numbers we shall have $x^2 - 32x = 3200$; whence $x = 74.78775$, and the area as above.

Again, by Messrs. Baines, Cattrall, and Cummins.

Put $x =$ sin. CAD = DAB, then, $\sqrt{(1 - x^2)} =$ sin. ADC; also $2x\sqrt{(1 - x^2)} =$ sin. CAB, and

$\surd(1-4x+4x^2)=$ sin. A B C; therefore, rad. : A B $= 100$: : sin. A B C $=\surd(1-4x+4x^2)$: A B $= 100\,\surd(1-4x+4x^2)$. Again rad. : A D $= 80$: : sin. A D C $=\surd(1-x^2)$: A B $= 80\,\surd(1-x^2)$, whence $100\,\surd(1-4x+4x^2)=80\,\surd(1-x^2)$; therefore, by squaring and reducing we get $x^4-.84\,x^2=-.09$, and $x=.35505$; consequently sin. C A B $=.66383$ and sin. A B C $=.74788$, therefore, A C $=74.788$, and B C $=66.383$, and &c.

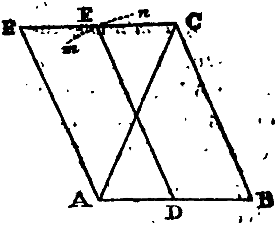
According to one or other of the above methods, answers were given by Messrs. *Brooke, Eyres, Hirst, Nesbit, Putsey, Rylando, Smith (Alton Park), and Webster;* and geometrical constructions by Messrs. *Hine, Maffett, Winward,* and *Whitley.*

6. Qu. (61) *Answered by Rylando.*

Let $h=$ height of the gnomon, b and $c=$ sine and cosine of the given latitude 53° 45′, d and $p=$ sine and cosine of the sun's declination. Then, by art. 11, Simpson's Dissertations, and the nature of the question $9:11::\frac{2hpd}{c^2-d^2}:\frac{2ph}{\surd(c^2-d^2)}$; therefore, $\frac{11d}{c^2-d^2}=\frac{9}{\surd(c^2-d^2)}$; from whence $d=\frac{9c}{\surd 202}=.3744392=$ the nat. sine of 21° 59′, which answers in the tables to the 31st of May, or the 12th of July.

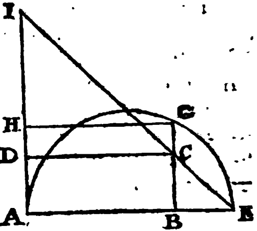
It was also answered by Messrs. *Baines, Nesbit, Putsey,* and *Tomlinson.*

7 Qu. (62) *Answered by Messrs. Brooke, Cattrall, Hine, Maffett, Nesbit, and Winward.*



Let A B C be the given triangle; bisect A B in D, and on D as a centre, with radius equal to half A C + B C, describe the arc m, n, draw C F parallel to A B, cutting the arc $m\,n$ in E; join E D, and parallel to it, draw A F meeting C F in F; then will the parallelogram A D E F be equal in area and perimeter to the triangle A B C. For since A D is $= \frac{1}{2}$ A B the parellelogram is evidently equal to the triangle, and because D E $= \frac{1}{2}$ (A C + B C), therefore A F + D E + 2 A D = A C + B C + A B.

Otherwise by Mr. E. S. Eyres, Liverpool.



Make A E $= \frac{1}{2}$ the given perimeter, and perp. thereto draw A I, and make A I = A E, and join I E; on A I set off A H = the side of a square, equal in area to the given triangle, draw H G parallel to A E, meeting a semicircle on A E in G, and on A E let fall the perp. G B, cutting I E in C; lastly, draw C D parallel to A B, and A B C D is the rectangle required. For $GB^2 = AH^2 = AB \times BE = AB \times BC =$ the given area; and $AB + BC + CD + DA = 2AB + 2BC = 2AE$. *Q. E. D.*

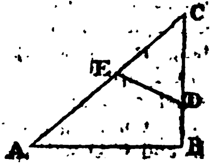
Mr. *Whitley*'s answer is the same in effect as the above.

Again, by Messrs. Baines and Putsey.

On A E = the semi-perimeter of the given triangle, describe the semicircle A G E, and, from A, erect A H perp. to A E, and = to a mean proportional between half the base and the perpendicular, draw H G parallel to A E, meeting the semicircle in G, and from G let fall the perp. G B, so shall A B be the length, and B E = B C the breadth of the parallelogram required; as is evident by the known property of the circle.

Other answers were sent by Messrs. *Gawthorp*, *Hirst*, *Rylando*, *Tomlinson*, and *Webster*.

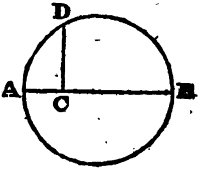
8 Qu. (63) *Answered by Mr. J. Gawthorp, Leeds.*



Let A B C represent the inclined plane; put $g = 16\frac{1}{12}$, then the velocity acquired by descending from C to A is $= 2\sqrt{(g \times CB)} =$ 50·728 (arts. 287 and 313, Marrat's Mechanics). Now if a body be projected up the plane with this velocity, it will, in the time x, describe the space $vx - gfx^2$ (art. 292 idem) f being $= \frac{CB}{AC} = .8$; but if it were let fall from C, it would, in the same time, describe the space $gx^2 = CD$. Let AE be the space described by the ascending body, then $CE = 50 - vx + fgx^2$. By trig. AC : rad. :: BC : $\frac{BC}{AC} = .8 =$ cosine of ACB, which put $= c$; then, by p. 124, Em. Trig. 2d edit. $DE^2 = CE^2 + CD^2 - 2c.CE.CD = (50 - vx + fgx^2)^2 + g^2x^4 - 2cgx^2 \times (50 - vx + fgx^2)$ which is to be a minimum, by the question. Make its fluxion $= 0$, and, by reduction, we get the following equation $x^3 + 13.8169x = 13.6186$, from whence $x = .9278'$, and $DE = 8.5291$ feet, is the distance required.

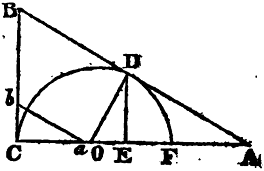
This is the only true answer which we have received to the question.

9 Qu. (64) *Answered by Messrs. Butterworth, Eyres, Hine, Maffett, and Winward.*



Let AB be the diameter of the circle ADBA, and let DB be the required arc; draw DC perp. to AB, and by the question $DC \times CB$, or $DC^2 \times CB^2$, or (because $AC \times CB = DC^2$) $AC \times BC^3$ is to be a maximum; which is known to be the case when $3AC = CB$, whence AC is $= \frac{1}{4}$ AB and the arc DB is evidently $= 120°$.

Again, by Mr. J. Whitley.



Let CB be an indefinite tangent to the semicircle CDF, at the point C; in this tangent take any point b, and to CF apply $ba = 2bc$; parallel to ab draw the tangent AB, touching the curve in D; and CD will be the arc required.

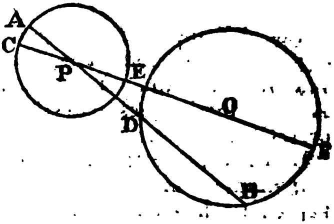
For let DE be the sine, and CE the versed sine of the arc DC, and since $ab = 2bc$, by sim. triangles, $AB = 2BC$, but by the property of tangents to the circle, $BC = BD$, therefore, $BD = DA$, and by Simp. on Max. et Min. the rectangle $DE \times CE$ is a maximum.

Inference. The arc $DC = 120°$. For drawing the radius DO, since $AB = 2BC$, ABC is evidently half an equilateral triangle whose side is AB; therefore, the $\angle B = 60°$, the supplement of which is the angle $DOC =$ arc $DC = 120°$.

Otherwise by Messrs. Baines, Brooke, Cattrall, Cummins, Gawthorp, Hirst, Nesbit, Putsey, Rylando, and Webster.

Let radius = 1, and put the versed sine $= x$; then, the sine $= \sqrt{(2x - x^2)}$, and $x\sqrt{(2x - x^2)}$ is to be a max.; make its fluxion $= 0$, and by reduction we have $x = \frac{3}{2} =$ versed sine of 120°, the arc required.

10. Qu. (65) *Answered by Mr. Vayheeg, the Proposer.*



Analysis. Suppose the thing done, and that PAC is the circle required; through P and O, the centre of the given circle, draw the right line CPEOF; then since AP, PD, PB is given, AP, PE, PF is given also. For PD, PB = PE, PF, and because the point P and the circle EDBF are given in position, PE, PF is given; therefore, AP is equal to a given line, but one extremity P of it is given, consequently, the other extremity A must be in the circumference of a circle whose radius is AP. Consequently AP, PE, PF is equal to AP, PD, PB, the given solid.

Again, by Mr. Whitley.

The point P and the circle EDBF being given, the rectangle PD, PB is given; and since the solid AP,

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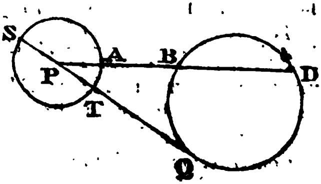
PD, PB is given, AP is given; therefore, a circle described about the centre P, with the given radius AP, will be that required.

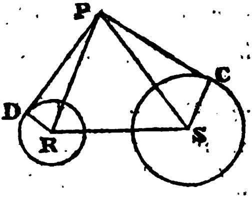
Otherwise by Rylando.



Let P be the given point, and QBD the given circle; draw the tangent PQ, and produce it to S, so that $QP^2 . PS$ may be equal to the given solid; then with radius $SP = PT = PA$, and centre P, describe the circle STA, and the thing is done. For the given solid is $QP^2 . PS = QP^2 \times PT = PA . PD . PB$, by a known property of the circle.

In the same elegant manner it was answered also by Messrs. *Brooke*, *Butterworth*, *Gawthorp*, *Hine*, *Maffett*, *Nesbit*, *Putsey*, *Tomlinson*, and *Winward*.

11. Qu. (66) *Answered by Messrs. Eyres and Rylando.*



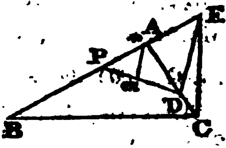
Let DR, CS, be the radii of the given circles, and P a point in the required locus; from P draw the tangents PD, PC, and join PR, PS, RS; then, it is evident that when $PD^2 + DR^2$ is constant, $PD^2 + DR^2$ $(PR^2) + PC^2 + CS^2$ (PS^2), that is $PR^2 + PS^2$ is constant; and because R and S are constant the locus of P will be a circle.

Cor. 1. If the difference $DP^2 - CP^2$ be constant, the locus of P will be a right line perp. to RS.

Cor. 2. By Mr. Whitley. When R and S coincide, RS vanishes, so that, in this case, the locus of P is a given circle, concentric with the given circles; hence question the 18th (72) is only a particular case of the above.

This question was answered also by Messrs. *Brooke*, *Butterworth*, *Gawthorp*, *Hine*, *Maffett*, *Nesbit*, *Putsey*, *Hayhoes*, *Whitley*, and *Winward*.

12. Qu. (67) *Answered by the Proposer.*



Because AE. DC is, by the question, to be a max. and EDP, DAP, are right angles, $AE = \frac{AD^2}{AP}$; therefore, $\frac{AD^2}{AP} \times DC$ must be a max. or $AD^2 \times DC$ a max. which is known to be the case when $AD = 2DC$. Hence we have the following

Construction. Divide AC in D, such, that $AD = 2DC$, join PD, and draw DE perp. to PD, intersecting BA produced in E, join EC, and the triangle EDC will be a max. as required.

Otherwise by Mr. Rylando.

Let ABC be the given triangle, P the given point, in the side AB, and draw the rest of the lines as in the figure above. Put $AE = x$, $PA = m$, and $AC = p$; then, $AD = \sqrt{mx}$, the area of the triangle $CAE = \frac{1}{2}px$, and the area of the triangle $DAE = \frac{1}{2}x\sqrt{mx}$; therefore, by the question $\frac{1}{2}px - \frac{1}{2}x.\sqrt{mx}$ is a max. and its fluxion $= 0$, whence x is found $= \frac{4p^2}{9m}$, $AD = \frac{2}{3}p$, and the area of the triangle $= \frac{2p^3}{27m}$. To construct the problem; make $AD = \frac{2}{3}AC$, join PD, and bisect it in m, draw mn perp. to PD, meeting PE in n, with centre n, and radius Pn, describe a circle, which will cut PA produced in E, the point required.

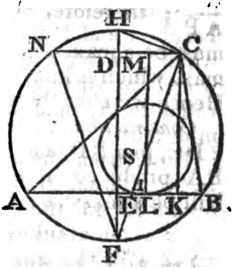
Answers were also given by Messrs. *Gawthorp, Hine, Maffett, Nesbit, Putsey, Whitley,* and *Winward.*

13. Qu. (68) *Answered by Mr. Nesbit, Farnley Academy.*

Put the area, length and weight of one beam respectively A, L, and W, that of the other a, l, and w, and let S, s, G, g, be as in the question; then, by art. 225, Marrat's Mechanics, $\frac{s \times A \times G}{L \times W} = \frac{S \times a \times g}{l \times w}$; but when the lengths are equal or $L = l$, the weights are as the areas, or $W : w :: A : a$; therefore, the above equation, under these circumstances, becomes $s \times G = S \times g$, that is, $S : s :: G : g$. *Q. E. D.*

And in nearly the same manner it was answered by Messrs. *Gawthorp*, *Harvey*, *Rylando*, and *Whitley*.

14. Qu. (60) *Answered by Mr. G. Harvey, jun. Plymouth.*



ANALYSIS. Suppose the thing done, and that ABC is the triangle required; because NC, the diff. of the seg. of the base, and NCF, the diff. of the angles at the base are given, HF, the diam. of the circumscribing circle is given; and because LK = MC is given, ML drawn parallel to HF is given in position, and the centre of the inscribed circle is in this line, by the question; but the centre of the inscribed circle is known also to be in the line CF, it is therefore at S, their point of intersection.

Now, by prop. 35. Mod. Geom. Student. $CS \times SF = HF \times SL$, and CS, SF, HF are all given; therefore LS is given; hence, if a circle be described from centre S with radius SL thus found, and CA, CB, be drawn from C, touching it, and cutting the circle ACB in A and B, and A, B, be joined, ABC will be the triangle required; as is evident from the analysis.

The same, by Messrs. Rylando and Whitley.

ANALYSIS. Suppose the thing done, and that ABC is the triangle required; then, since the diff. of the angles at the base, and the diff. of the seg. of the base are given, the triangle CDF is given; draw CH perp. to CF, meeting FD produced in H, then HD, and the diam. HF are given.

But KL is given, and from thence EL; also by prop. 111. Mod. Geom. Student. $EL^2 = EK \times EI$; therefore, EI becomes known, and of course IK; but $HD \times DE = EK \times IK$; therefore, DE becomes known, and the method of construction is evident.

Solutions were given also by Messrs. *Butterworth*, *Eyres*, *Hine*, *Webster*, and *Winward*.

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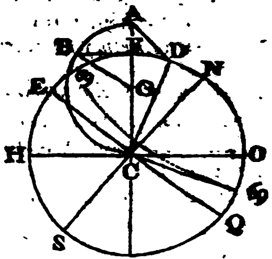
15. Qu. (70) *Answered by Mr. Nesbit, Farnley Academy.*



In the annexed figure let H O denote the horizon, E Q the equator, ♋ the tropic of Cancer, N the north and S the south pole, F the town of Farnley, and D the point in which the sun's upper limb would appear to a person elevated to A, on June 21st, at midnight.

Now, from the co-latitude = 36° 13′, substract the declination = 23° 28′, and we obtain 12° 45′, the depression of the sun's centre below the horizon at midnight, from which take 15′ 47″ + 33′ = 48′ 47″, the semi-diameter and refraction, and add 9″ for parallax, and we get 11° 56′ 22″ = ∠ O C ♋ = ∠ A C D. Then, in the right-angled triangle A D C, right-angled at D; as the nat. co-sine of 11° 56′ 22″ : C D = 3985 :: rad. : AC = 4073.1141 nearly; from which take 3985, and there remains A F = 88,1141 miles, the height to which a person must be elevated, to see the sun's upper limb at the given time.

Put CF = r = 21040800 feet, the radius of the earth; A C = a = 21506042.448 feet, the distance fallen from; $g = 16\frac{1}{12}$ feet, half the velocity or force at F; v = the velocity required, and t = the time of falling from A to F; then (see Dr. Hutton's Course, vol. ii. p. 335; Marrat's Mechanics, art. 665; or Vince's Flux. art. 81)

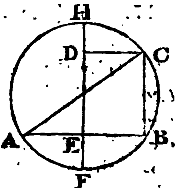
$$v = \sqrt{4gr \times \frac{a-r}{d}} = 5411 \text{ feet per second.}$$

Again, with the radius AG = G C, describe the semicircle A B C; draw B F perpendicular to A C, and join B G; then, we have B G = 10753021.224, and G F = 10287778.776, to find the angle B G F = 16° 54′ 56″, and side B F = 3128751.6. We also find the arc A B C = 33781691.4773; and, as 180° : 33781691.4773 :: 16° 54′ 56″ : 3174644.883 = the arc A B; then, per *idem, ut supra*, $t = \sqrt{\frac{a}{4g}} \times \frac{AB + BF}{CF} = 173'' = 2' 53''$, the whole time of falling to the surface.

Lastly, as rad. (1) is to the nat. co-sine of the lat. 53° 47′, so is 25038.552 (the circumf. of the earth) to 14793.788079 miles, the space through which the town of Farnley is carried in 24 hours, by the earth's diurnal rotation on its axis; and, as 24h : : 14793.788079 : : 2′ 53″ : 29.62182 miles, the distance that the body would fall west of Farnley."

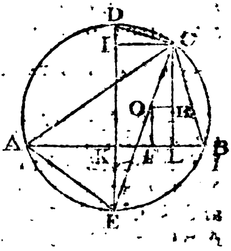
This question was answered also by Messrs. *Baines*, *Brooke*, *Cattrall*, *Gawthorp*, *Hine*, *Hirst*, *Maffett*, *Putsey*, *Rylando*, *Smith*, *Whitley*, and *Winward*.

16. Qu. (71) *Answered by Rylando.*



Analysis. Suppose the thing done, and that ABC is the triangle required; then because the diff. of the segments of the base, and the diff. of the angles at the base are given, the diam. HF is given. But the rectangle of the segments of the diameter HD. EF = the square of the diff. of the sides, and DE = CB the perpendicular; therefore, by the question, HD × DE^2 × EF is to be a max.; or since DH is constant DE^2 × EF must be a max. which will be the case when DE = 2EF. If, therefore, we take EF and DH = $\frac{1}{4}$ FH and through the points E, D, we draw AB and DC perp. to FH, and lastly join A, C, B, C, ABC will be the triangle required.

Otherwise by Messrs. Butterworth, Whitley, and Winward.



Analysis. Suppose the thing done, and that ACB is the triangle required, and draw the lines as in the figure; then, the angle DEC being = half the given diff. of the angles at the base, and KL = IC being also given, the right-angled triangle DEC is given, and ID is given. Again; (AC — CB) × CL (IK) or (AC — CB)^2 × IK^2 is to be a max.; but it is well known, that (AC — CB)^2 = 4ID. KE, and 4ID is given; therefore, IK^2 × KE must be a max.; which will be the case when 2KE = IK; therefore, KE and IK are given, and the construction is obvious.

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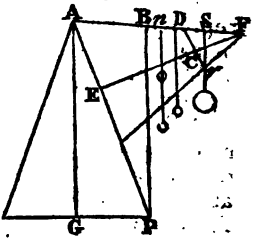
Again, by Mr. E. S. Eyres and Mr. Gawthorp.

Since CI (see last fig.) and the angle CEI are given, EI and EC become known; but $CL \times (AC - CB)$ is to be a max.; or $CL^2\ (IK^2) \times (AC - CB)^2 = IK^2 \times 4ID \times EK$ is to be a max.; in which case $EK = \frac{1}{4} KI$; whence this construction. Make $IC = \frac{1}{2}$ diff. segments of the base, and having constructed the triangle ICE, set off $EK = \frac{1}{3} EI$, draw KB perp. to DE, meeting the circle passing through DCE in A and B, join AC, BC, and ABC is the triangle required.

17. Qu. (72) *Answered by Mr. W. Putsey, Pickering Academy.*



1. *For the equilibrium of the two cones.* Put the radius of each cone's case $= x$; then, in case of an equilibrium, we shall have the arm $AB =$ arm BD; also the line of direction CD of the hanging cone, will be parallel to AG, and perp. to AF; hence, $AF = \sqrt{(x^2 + 144)} : EF = 12 :: CF = 9 : DF = \sqrt{(x^2 + 144)} - 2x$, and multiplying means and extremes, we have, by reduction, $x^4 + 168x^2 = 432$; and $x = 1.591612$.

2. *For an equilibrium with the standing cone, the suspended globe, and the hanging frustum.* Put the length of the part to be cut off $= 4z$, then the radius of the less end of the frustum will be $\frac{xz}{3}$, and by art. 656. Marrat's Mechanics, $FO = 9 + \frac{3z^3}{9 + 3z + z^2}$. Also $AF = 12.105091 : EF = 12 :: FO : Fn = 8.921866 + \frac{2.973955z^3}{9 + 3z + z^2}$; consequently the arm $Bn = 1.591612 - \frac{2.973955z^3}{9 + 3z + z^2}$, which may be supposed to be acted upon by the wt. of the frustum, which is found to be $= \frac{27 - z^3}{.848161}$ (put this $=$ F). Again, $EF : AF :: 4z : Fr =$

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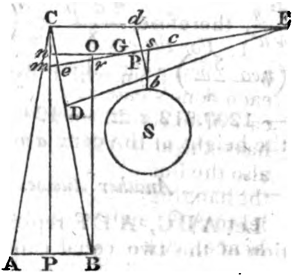
$4.03503\,z$; and rad. : Fr : : cos. $SFr = .9654245 : FS = 3.895517\,z$; consequently the arm $BS = 10.513479 - 3.895517\,z$, which may be supposed to be acted upon by the wt. of the globe, or 16.888995, which call G. Finally, put the solidity of the standing cone, which is $31.83356587 = C$; then, by the property of the lever, $F \times Bn + G \times BS = C \times GP$; that is, in symbols, $z^6 - .5352\,z^5 - 1.60555\,z^4 - 50.58\,z^3 - 5.65026\,z^2 - 16.9508\,z + 455.758 = 0$; and from this equation $4z$ is found $= 8.1144$, as required.

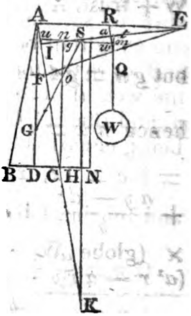
Again, by Mr. Gawthorp.

Let the annexed figure represent the cones, G being the centre of gravity of the hanging cone. Draw Gn perp. to CP. BO perp. to AB, and produce Ee to meet CP in m; then, when the standing cone is just able to sustain the other, the weight of both will act at B, or in the line OB. But the weight of the cone ABC acts in the line CP, or at n, and that of CDE acts at G, therefore (the cones being equal) $OG = On$ or $Gn = 2PB$. Put $a = CP = Ee = 12$, $x = Ce = PB$, then $CB = \sqrt{a^2 + x^2}$, and by sim. tri. $CP : BP :: Ce : em = \frac{x^2}{a}$, and $CB : CP :: Gm = \frac{a}{4} + \frac{x^2}{a} : Gn = \frac{\frac{1}{4}a^2 + x}{\sqrt{a^2+x^2}}$ which must equal $2x$, and we get $x = \sqrt{(12\sqrt{52} - 84)} = 1.5916$, hence $AB = CD = 2x = 3.1832 =$ the base of each, $Gm = 3.2111$, and $Gn : Gm :: Go = \frac{Gn}{2} : Gr = 1.60555$, then $Er = \frac{3a}{4} + Gr = 10.60555$. Let abE be the part cut off, c its centre of gravity, then the globe must be suspend at b, draw $bs \parallel BO$, meeting the axis of the suspended cone, in s. Put $y = Ep$, $p = .7854$, $b = Er$



$= 10.60565$ and $d = 3.1832$ the diameter of the globe S, then $CP : BP :: Ep : bp = \frac{dy}{2a}$ and $Ep : bp :: b : ps$ $ps = \frac{d^2y}{4a^2}$, hence $rs = Er - Ep + Ps = b - y + \frac{d^2y}{4a^2}$ and $rc = b - \frac{3y}{4}$, also the weight of the globe is as $\frac{2d^3p}{3}$, and that of the cone abE is as $\frac{d^2y^3p}{3a^2}$. But to produce an equilibrium, when the cone abE is taken away, we must have $\frac{2d^3p}{3} : \frac{d^2y^3p}{3a^2} :: b - \frac{3y}{4} : b - y + \frac{d^2y}{4a^2}$, therefore $\frac{2d^3p}{3} \times \left(b - y + \frac{d^2y}{4a^2}\right) = \frac{d^2y^3p}{3a^2} \times \left(b - \frac{3y}{4}\right)$ from which by red. we get $x^4 - 14.1407x^3 - 1200.812x = -12963.6813$ and $x = 8.114$ feet, the height of the cone abE, which must be cut off.

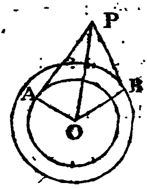
Another Answer by Mr. J. Whitley.



Let ABC, AEF represent a section of the two equal cones through their axes; G S their centres of gravity. By Mechanics, the cone ABC will just sustain AEF when CO perp. to BC passes through O their common centre of gravity; hence since the cones are equal OG = OS. Draw SK parallel to AD meeting BC, AC produced in H K. Then since OG = OS, by sim. tri. DC = CH, and AC = CK. Put AD = EI = $a = 12$, DC = AI = r; then AC = CK $= \sqrt{a^2 + r^2}$; and by sim. tri. ADC, SIK, DC = r : AD = a :: IS = $\frac{a}{4}$ (by art. 656 Marrat's Mechanics) : $\frac{a^2}{4r}$ = IK; hence AK $= \frac{a^2}{4r} + r = 2\sqrt{a^2 + r^2}$; and $r = 1.5916$. Secondly: through g, the centre of gravity of the frustum AFQR draw mu parallel to BH meeting QW in m, CO in n, and AC in u. Put AC $= b, = 12.105$, CI $= d = 10.5134$, $n = .7854$, $s = \frac{4nar^2}{3}$, = the solidity of the cone ABC, $W = \frac{16nr^3}{3}$, = the solidity of the globe, $Qa = x$, and $gI = y$; then the solidity of QRE $= \frac{4anx^3}{3r}$, and that of AFQR $= S - \frac{4anx^3}{3r}$. By sim. triang. $a : r :: y : \frac{ry}{a} = Iu$; $a : b :: y : \frac{by}{a} = gu$; $b : r :: Cu, = a + \frac{ry}{a} : un = \frac{dr}{b} + \frac{r^2y}{ab}$; $a : r :: x : \frac{rx}{a} = at$; $r : a :: x : \frac{ax}{r} = aE \therefore ga = IE - gI - aE = a - y - \frac{ax}{r} \therefore gt = ga + at = a - y - \frac{ax}{r} + \frac{rx}{a}$; then $b : a :: gt : gm = \frac{a^2r - ary - a^2x + r^2x}{br}$. By the property of the centre of gravity, $gw = \frac{gm \times W}{W + \text{frust. AFQR}} = \frac{(a^2r - any - a^2x + r^2x) \times W}{\left(W + S - \frac{4anx^3}{3r}\right) \times br}$; but $gn = gu - un = \frac{by}{a} - \frac{dr}{b} - \frac{r^2y}{ab} = \left(\frac{ay - dr}{b}\right)$; hence $nw = CN = \frac{(a^2r - ary - a^2x + r^2x) \times W}{\left(W + S - \frac{4anx^3}{3r}\right) \times br} + \frac{ay - dr}{b}$. By Mechanics, DC × cone ABC = CN × (globe W + frust. AFQR); that is $r \times s = \frac{(a^2r - ary - a^2x + r^2x) \times W}{br} + \left(\frac{ay - dr}{b}\right) \times \left(W + S - \frac{4anx^3}{3r}\right)$. Multiplying each side of this equation by $\frac{b}{aW}$, and restoring s and W, we get, by due reduction, $y + \frac{a}{r}x - \frac{r}{a}x - \left(y - \frac{dr}{a}\right) \times \left(1 + \frac{a}{4r} - \frac{ax^3}{4r^4}\right) = a - \frac{b}{4}$. But it is evident from Ex. 2, art. 656, Marrat's Mechanics, that $y = \left(\frac{r^2+2rx+3x^2}{r^2+rx+x^2}\right) \times \left(\frac{a}{4} - \frac{ax}{4r}\right)$. From these equations, I find (by the rule of double position) $x = 1.081$ ft. nearly; and hence the solidity of the part E Q R to be cut off is = 9.97 feet, as required.

Answers were also given by Messrs. *Rylando*, *Tomlinson*, and *Maar*.

18. Qu. (73) *Answered by Mr. J. Butterworth, Haggate.*



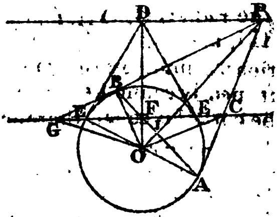
Let A P and B P be two tangents intersecting in P, and draw the radii O A, O B, and join O P; then by the question $AP^2 + BP^2$ is given, and AO and OB are given; therefore, $AP^2 + AO^2 + BP^2 + OB^2 = 2\,OP^2$ is given; hence O P is given; and O is given, therefore the locus of P will be a circle concentric with the given circles. This is only a particular case of question 11.

In the same manner it was answered by Messrs. *Baines, Brooke, Eyres, Gawthorp, Hine, Maffett, Nesbit, Putsey, Whitley, Winward*, and *Vayheeg*.

19. Qu. (74) *Answered by Messrs. Gawthorp, Nesbit, Rylando, and Whitley.*

Retaining the notation made use of in art. 786, Marrat's Mechanics, we have by trig $c : \surd(1-x^2) :: 1 : \frac{1}{c}\surd(1-x^2)$, hence $\frac{A}{c}\surd(1-x^2) - \frac{m}{n}A + \frac{Amx}{n}$ is the friction on the inclined plane; which, by the question, is to be the least possible; therefore its fluxion $\frac{m}{n}\dot{x} - \frac{x\dot{x}}{c\surd(1-x^2)} = o$, whence $\frac{m}{n} = \frac{x}{c\surd(1-x^2)}$, and $x = \frac{mc}{\surd(c^2m^2+n^2)}$, or, (art. 773, ibid. when $m = 1$ and $n = 3$) $\frac{c}{\surd(9+c^2)}$. This result is different from that given at art. 19, p. 191, Young's Analysis, but that is, in all probability, a press error.

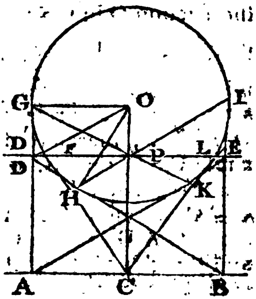
20. Qu. (75) *Answered by Rylando.*



Composition. From the centre O of the given circle A E B, demit O D perpendicular to the line D P given in position, and from the point D draw the tangents D E, D E; then through the points E, E, of contact draw the indefinite right line G E C, which will be that required.

Demonstration. From any point P in P D draw the tangents P B G, P C A meeting G E C in the points G, C; it is to be proved that B G is equal C A. Draw the other lines as per figure, then if O P meet A B in I, and O D meet E F in F, we shall have by the well-known properties of the figure $OF \times OD = EO^2$ and $OI \times OP = AO^2 = OE^2$; therefore $OE \times OD = OI \times OP$; or $OI : OE :: OD : OP$; thus it appears that the point F is in the right line A B; therefore ∠ A F C = ∠ B F G, but the angles G B O, G F O are right angles, and therefore the points G, B, F, O, are in a circle, wherefore ∠ B F G = ∠ B O G. In the same way exactly it may be shown that the angle A F C = ∠ A O C, therefore ∠ B O G = ∠ A O C, and because the right angled triangles O B G, O A C have the ∠ B O G = ∠ A O C and O B = A O, they are, therefore, equal in all respect, and consequently B G is equal to A C. *Q. E. D.*

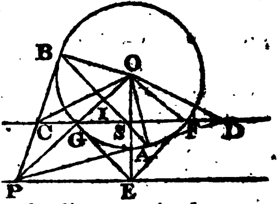
Again, by Mr. Butterworth.



Construction. From the centre O of the given circle, demit O C, perp. to A B, the line given in position; and from C draw the tangents C F, C L, and through the points F, L, draw the indefinite line D E, and it will be that required.

Demonstration. From any point B, in A B, draw the tangents B H, B I, meeting D E in D, and E; and take C A equal to C B, and draw the tangents A G, A K; also let the tangent A G meet the tangent B H in D′; draw the radii O G, O H, and join O D′; also, join G K, and H I, and it is well-known that they will intersect each other, and the lines D E, and O C in the same point P. Then, because A C and C B are equal, the arcs H G and K I will be equal, therefore the angle H P G = H O G, consequently the circumference of a circle will pass through the points G, P, H, D′; and the angle G P D = E P I = H P D, therefore, the angle H P D = H O D′; consequently the points D, D′ coincide in D. Again, the tangents D H, D G, E K, and E I, are evidently all equal, therefore H D = E I. *Q. E. D.*

Again, by Mr. Whitley.



From O, the centre of the given circle B G A F, demit on P E the straight line given in position, the perp. O E: draw the tangents EF, E G; then through the points of contact G, F, draw the indefinite right line C D, which will be the line required.

Demonstration. From any point P in P E, draw the tangents P A, P B, meeting C D in the points D, C; then will A D be equal to B C. For drawing the lines as in the figure, let A B meet O P in I, and C D meet O E in S; then the triangles O S F, O F E will be similar, as will also the triangles O I B, O B P; therefore O S : O F : : O F : : O E, and O I : O B = O F : : O B = O F : O P; hence by equality O I : O S : : O E : O P; thus it evidently appears that the point S is in the straight line A B. Again; since the angles O S D, O A D are right angles, a circle might pass through the points O, S, A, D; and for the same reason a circle might pass through the points O, S, C, B; therefore the angle O D A is equal to the angle O S B, that is, equal to the angle O C B in the same segment; hence, since in the triangles O A D, O B C, the angle O D A is equal to the angle O C B, the angle O A D equal to O B C, each being a right angle, and the side O A equal to the side O B ∴ the triangles are identical; and therefore the segment A D is equal to BC. *Q. E. D.*

It was also answered by *Mr. Gawthorp.*

Mr. *Jesse Winward* is requested to send for any book, the price of which does not exceed Half a Guinea.

NEW MATHEMATICAL QUESTIONS

TO BE ANSWERED IN NO. IX.

1. Qu. (97) *By Mr. Rt. Maar.*

Extract the .6" root of .0005.

2. Qu. (98) *By the same.*

Find the value of $\frac{3}{8}\sqrt[5]{5\times\sqrt[4]{6\times\sqrt[3]{7\times\sqrt{8}}}}$ to 6 places of decimals.

3. Qu. (99) *By Mr. J. Baines, jun.*

At what time of the day, on the 9th of Dec. 1812, in lat. 53°, 42' N. will the sun's alt. above the horizon be equal to his azimuth from the south?

4. Qu. (100) *By the same.*

The square of any prime number of the form $3n+1$, is of the form $3a^2+b^2$; where b is a prime, and a a composite number: required proof.

5. Qu. (101) *By Mr. W. Putsey, Pickering.*

It is proposed to divide the beam of a steelyard, or to find the points of division where the weights of 1, 2, 3, 4, &c. ℔s. on one side, will just balance a constant weight of 95 ℔s. at the distance of two inches on the other side of the centre of suspension; the weight of the beam being 10 ℔s. and its whole length 36 inches. (Hutton's Course.)

6. Qu. (102) *By Mr. Nesbit, Farnley.*

There is a field in form of a trapezoid, the parallel ends of which, perp. to one side (the base) are 9 and 15 chains, and the base 40 chains; divide it equally among three persons, by fences, parallel to the perpendicular sides.

7. Qu. (103) *By Mr. Rt. Maar.*

Every thing being as in question 8 (63), to determine when and where the bodies will both be in a right line parallel to the horizon.

8. Qu. (104) *By Mr. Gawthorp.*

Determine a point in the side of a cone, the perp. alt. and base of which are respectively 3 and 2 feet, to which if a string be fastened, and the cone suspended by it, the axis of the cone may make an angle of 25° 15′ with a plane parallel to the horizon.

9. Qu. (105) *By Mr. Nesbit.*

If the greatest altitude of the piston of a common sucking pump above the surface of the water be 18, and the least alt. 15 feet; how high will the water rise in the pump by 3 strokes of the piston, admitting the height of a column of water, equivalent to the pressure of the atmosphere, to be 32 feet?

10. Qu. (106) *By Mr. J. Winward, R. L. Militia, Plymouth.*

Determine the area of the curve, whose equation is $y = (a^2 + x^2)^{\frac{1}{2}} + (a^2 + ax + x^2)^{\frac{1}{2}}$.

11. Qu. (107) *By Mr. J. Baines, jun. Horbury Bridge.*

Reduce a given triangle to a trapezium, having the same area and perimeter.

12. Qu. (108) *By Mr. J. Whitley, Masbro'.*

Determine a triangle whose three sides shall be integers, in arithmetical progression, such that the area and the diameters of the inscribed and circumscribed circles, shall be all integers.

13. Qu. (109) *By the same.*

Let ABC be a plane triangle, and let AF, BE, be tangents to the circumscribing circle at A, B; draw CEF perp. to AB, cutting AF, BE, in F, E; the square of AC is to the square of BC, as CF to CE; required a demonstration.

14. Qu. (110) *By the same.*

Find p and q in general terms, so that $p^2 + q^2 + 2$ and $p^2 q^2 - 1$ may be squares.

15. Qu. (111) *By the same.*

Find expressions for the principal diameters of the maximum ellipse inscribed in a given sector of a circle;

and give an example in numbers when the radius is 10, and the arc contains 147°, 28′, 46″ $\frac{2}{5}$.)

16. Qu. (112) *By Mr. J. Butterworth, Haggate.*

Given the base, one of the angles at the base, and the sum of the perpendicular and line bisecting the base, to construct the plane triangle.

17. Qu. (113) *By Mr. G. Harvey jun. Plymouth.*

Given, the vertical angle, the line which bisects it and meets the circumference of the circumscribing circle, and the sum of the cubes of the sides, to construct the plane triangle.

18. Qu. (114) *By Mr. R. Vayheeg, Plymouth.*

Given the base, and the difference of the adjacent angles, to construct the plane triangle, when the sum or difference of the squares of the lines drawn from the extremities of the base, to the centre of the inscribed circle, is equal to a given space.

19. Qu. (115) *By Mr. Putsey.*

The height of my garden wall, which stands on horizontal ground, is 8 feet, and the length of a ladder, which is placed in a vertical position against it, is 18 feet; now, admitting the foot of the ladder to be drawn along the ground, directly from the wall, it is required to determine the greatest projection of the top of the ladder over the other side of the wall, and also the area of the curve which is the locus of the top of the ladder in its descent to the top of the wall.

20. Qu. (116) *By Mr. A. Hirst, Marsden.*

If to the base of a hemisphere of lead, a cone of cork, of a proper length, having the same base, be cemented, it will constitute the toy called a *tumbler* or *mountebank*, which will always recover an erect position, however it may be thrown or laid on a table; required the length of the greatest and least axes of the cone of cork, and also the proper length; so that it may rise in the most favourable manner possible: the radius of the hemisphere being one inch, and the specific gravity of lead and cork 11325, and 240 respectively.

The Prize as before.

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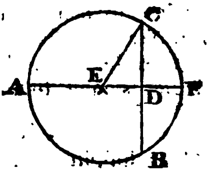
OBSERVATIONS

TO ELUCIDATE THE PRINCIPAL PROPERTIES OF THE LEVER.

BY MR. A. HIRST, MARSDEN.

As most writers have found some difficulties in demonstrating the fundamental properties of the lever, if you think the following worth noticing, it is at your service. The idea it contains is new to me, and may be so to several other of your readers, to others it may not; it is, however, different from the demonstrations usually given in books on Mechanics; and as every mode of contemplating truth strengthens the intellectual faculties, your inserting it may do some good, but cannot possibly do any harm.



Let the circle A B C be considered as a heavy ring of uniform matter, equally diffused through its whole circumference; it will then be at rest, if supported at its centre E; this principle will readily be admitted. If, also, the weight of the ring be supposed to be separated into a number of equal weights, placed uniformly at equal distances in the circumference, there will still be an equilibrium; first considering their number as infinite, and afterwards as finite. Consider, now, the matter as all collected equally into the three points A, B, C, equally distant, that is, at the distance of 120°, and by what has been said, there will still be an equilibrium. Therefore, a weight at A supports the weights B and C, which are together = 2 A; but, the weights B and C, acting at the points B and C, may be considered as acting at D; hence, a weight = 2 A acting at D, will balance, or keep in equilibrium, the weight A acting at A. But it may be easily proved, that A E = 2 E D, for, E D = cosine 60° = sine 30° = $\frac{1}{2}$ rad. = $\frac{1}{2}$ E F, therefore, a weight at D, will be in equilibrium with *half* its weight at A, when the distance A E is the double of E D. And, with some trifling modifications, the method may be extended to any other case.

GEOMETRICAL PROBLEMS
BY THE COMPASSES ALONE.

PROBLEM I.

To divide the circumference of a given circle into four equal parts, or to find the chord of 90°.

ASSUMING a point in the circumference of the circle, as one extremity of a diameter, apply from thence the radius three times along the circumference, and thus we get the other extremity of the diameter, and we also mark off the arches of 60° and 120°. With the chord of 120° as a radius, from the two extremities of the diameter just determined, describe two arches, intersecting one another. The distance of this intersection from the centre of the given circle, is the chord of 90°, or of the fourth part of the circumference; and taken in the compasses, serves to divide it into four equal parts.

The truth of this is easily made evident. If the radius of the given circle = 1. the square of the diameter = 4; and since the lines drawn from the extremities of the diameter, to any of the points of division in the circumference, contain a right angle, and are one of them the chord of 60°, and the other of 120°, the sum of their squares = 4; from which, taking away the square of the chord of 60°, or of the radius = 1, there remains the square of the chord of 120° equal to 3. The square of the line drawn from either extremity of the diameter, to the intersection of the two arches, is therefore = 3; and this line being the hypothenuse of a right-angled triangle, having the right angle at the centre of the circle, if we take away from the square of it the square of the radius, the remainder 2 is the square of the distance of the centre from the intersection of the arches. That distance is, therefore, = $\sqrt{2}$. But the chord of 90° is also = $\sqrt{2}$ when the radius is unity. Therefore, &c. *Q. E. D.*

PROBLEM II.

To divide the circumference of a circle into eight equal parts.

FROM the intersection determined above in problem 1st, with a radius = 1 (that of the given circle) describe an arch intersecting the given circle. This intersection will bisect the arch of 90° above determined. The demonstration is evident.

PROBLEM III.

To divide the circumference of a circle into five equal parts; or to construct a regular pentagon.

HAVING assumed one extremity of a diameter, and determined the other, as in problem 1st; and also the arch of 90°, or the middle of the semicircle; from this last point set off on each side an arch of 60° (by taking the radius in the compasses;) these together are = 120°. From the extremities of the chord of 120° thus found, with the chord of 90° for the radius, describe two arches intersecting one another on that side of the chord of 120°, where the diameter already determined lies. The distance of this intersection from either of the extremities of the diameter, is the chord of 72°, or the side of an equilateral pentagon inscribed in the circle. The demonstration cannot easily be given here; but it depends on this, that the side of the equilateral pentagon, the radius being 1, is $= \sqrt{\frac{5-\sqrt{5}}{2}}$.

This is very nearly the same construction as is given by Ptolemy in his *Almagest*, for finding the chord of the fifth part of the circumference.

From Mascheroni's *Geometrie du Compas.*

ERRATA IN NO. VI.

Page 145, line 7, for word, read *words.*
...... 145, ... 10, before the word Chaldee, insert גלד.
...... 145, ... 11, for *τελα*, read Τελα.
...... 146, ... 14, for Sabbate, read *Sabbat.*
...... 147, ... 6, for Faꝺeꞅ, read Faꝺeꞃ.
...... 147, ... 13, for Moꝺeꞅ, read Moꝺeꞃ.
...... 148, ... 1, for Æꝺꝺeꞅ, read Æꝺꝺeꞃ.
...... 148, ... 8, for Bıꞇeꞅ, read Bıꞇeꞃ.
...... 193, ... 6, (of the Antiquarian Answers) for Lorimer, read *Lorum.*
...... 212, ... 1, for *R*owell, read N*owell.*

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THE

ENQUIRER.

Juvenile Department.

COMMUNICATIONS

ON PRIZE SUBJECTS PROPOSED IN NO. VII.

ARTICLE XIII.

Translated by Master W. Kelsal, Liverpool; who is requested to send for any book he may think proper, the price of which does not exceed one guinea.

VIRGIL. ECLOGUE IV.—POLLIO.

A LOFTIER lay we sing, Sicilian maids,
All love not myrtles, and the sylvan shades.
If we our strains to sing the woods prepare,
The woods are worthy of a consul's care.
Now comes the æra of the Sibyl's song:
Of freshborn ages springs a glorious throng.
Astrea now, and years Saturnian rise:
Now a new progeny forsakes the skies.
Do thou, Lucina, chaste benignant pow'r!
Smile on the babe in this his natal hour,
Beneath whom first these iron times shall end,
And o'er the globe the golden age extend:
Now Phœbus reigns, thy brother and thy friend.
To grace thy rule, O Pollio, now appears
This age's boast: now roll the mighty years.
Thou shalt destroy our guilt's remaining stains,
And free the world from terror's lasting chains.
Bless'd with immortal life, shall he behold,
And stand beheld by, demigods of old:

And rule the world, to whose impending woes
His father's virtues gave a sweet repose.
On thee the earth spontaneous gifts shall show'r,
The winding ivy, and the charmed flow'r,
Egyptia's bean, acanthus, laughing sweets;
Homeward the goats shall wind with swelling teats;
Nor shall the herds the lordly lion dread;
Sweet flow'rs their bloom shall round thy cradle spread:
Die shall the snake, and die the noxious root;
From every clod shall Syrian spices shoot.
Soon as thy youthful eye with wonder reads
The praise of heroes, and thy father's deeds;
Soon as the form of virtue thou shalt know,
With rip'ning ears the golden field shall glow;
The blushing grape shall hang upon the briar,
And dews of honey knotted oaks perspire:
Our ancient fraud some lurking spots shall leave
To force us still the wat'ry way to cleave;
To gird with walls the city's ample round,
And trace the furrow on the laboured ground.
Another Tiphys at the helm shall stand,
Another Argo bear the chosen band;
And other wars th' imperfect bliss alloy,
And great Achilles seek another Troy.
But oh! when manhood crowns thy riper age,
No sailor then shall tempt the ocean's rage:
No nautic fir shall trade from coast to coast,
But every clime shall every blessing boast.
No plough the land shall need, no hook the vine,
Nor sturdy ploughman yoke his useless kine.
The fleece no more shall shine with borrowed hues;
But whilst the ram the peaceful pasture wooes,
His sides shall glow with sweetly blushing red,
And flame in yellow from the saffron bed:
And ruddy sandyx, as the lambkins rest,
Shall clothe spontaneously each woolly vest.
Speed on ye years: as o'er the threads they hung,
The fatal sisters to their wheels have sung,
Thy honours seize (the web of time is wove)
Child of the gods, thou great increase of Jove!
Behold this orb, (for such the song of fate)
This convex body nodding with its weight,

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And earth, and ether, and the vast abyss;
See all things eager for the age of bliss.
Oh might my life, my vigour last so long,
To chaunt thy glories in my glowing song;
From me should snatch the victor's bright reward
Nor lofty Linus, nor the Thracian bard;
Though this a mother, that a father arms,
Though one Calliope, one Phœbus warms.
Should Pan the strife before Arcadia wield,
Before Arcadia Pan himself should yield.
Begin, O boy, thy mother's smile to know:
(For ten long months she bore her patient woe.)
To him, on whom no parent's smiles have fed,
No god vouchsafes a board, no goddess mounts his bed.

Attested by Dr. R. Lewin, his uncle.

ARTICLE XIV.

TRANSLATED by Miss Mary Greaves, aged 14½, who is requested to send for any book she may think proper, the price of which does not exceed seven shillings.

As soon as morning dawned, they brought Paul reclining on a palanquin. He had recovered the use of his senses, but not the power of utterance. His interview with his mother and Madame de la Tour, which I at first dreaded, produced a better effect than every precaution, which, till then, I had taken. A beam of consolation shone upon the countenance of these two unhappy mothers. They placed themselves by his side, clasped him in their arms, kissed him with transport, and their tears, which, till then, had been restrained by the excess of their grief, began to flow. Those of Paul were soon mingled with them. Nature being thus relieved in these three unhappy beings, a suspension of their faculties succeeded the convulsive state of their grief, and procured them a lethargic slumber, truly resembling death. Monsieur de la Bourdonaye sent to warn me secretly, that the body of Virginia had been brought by his orders into the city, and thence was to be conveyed to Shaddock Grove Church. I immediately descended to Port Louis, where I found the inhabitants assembled from all quarters, in order to be present at her funeral, as if the island had lost its greatest treasure. The vessels in the port had their yards crossed, their colours hoisted, and fired cannons at long intervals. Grenadiers commenced the funeral procession, carrying their guns downwards. Their drums, covered with long crapes, echoed only doleful sounds, and dejection was painted in the features of these warriors, who had so frequently faced death in combat without any change of countenance. Eight of the most respectable young ladies of the island, clad in white, and holding each of them a palm-branch in her hand, carried the body of their virtuous companion, strewed with flowers. A choir of little children, singing hymns, followed; behind whom were the most distinguished of the island, and its staff; at the retinue of which marched the governor, followed by the multitude. Behold what the administration had appointed, for the purpose of rendering due honours to the virtuous Virginia. But when her body arrived at the foot of this mountain, the whole funeral ceremony was deranged at the sight of these cottages, the happiness of the inhabitants of which she had for so long a time created, and whom her death now filled with despair: the hymns and cantos ceased; there was no longer heard any thing in the plain but sighs and sobs. Troops of young girls were seen running from the neighbouring habitations, in order to touch the coffin of Virginia, with handkerchiefs, chaplets, and crowns of flowers, invoking her as a saint. The mothers were beseeching God to grant them such a daughter; the youths, a sweetheart so constant; the poor, a friend so tender; the slaves, a mistress so kind. As soon as she arrived at the place of interment, negro women from Madagascar, and Caffres from Mosambique, placed around her baskets of fruit, and suspended pieces of stuffs to the adjacent trees, according to the custom of their country. Indians from Bengal, and those of the Malabar Coast, brought cages filled with birds, to which they gave liberty around her body;—so much does the loss of an amiable object

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interest every nation, and so great is the power of unfortunate virtue, since it unites all religions around its tomb.

Attested by Mrs. Batt, Wirtemberg-House, Hackney.

Miss Hannah Wedd, aged 12¼, at the Miss Wrights' Seminary, Boston, is requested to accept of any book, value four shillings, for her Translation of the above Article.

Master H. Atkins, aged 14, at Mr. Abraham's Academy, Sheffield, will also accept of any book, value four shillings, for his Translation of the above Article.

Very good Translations, and worthy of much commendation, were sent by

Miss Maria Barnett, aged 15, at the Miss Wrights' Seminary, Boston.

Attested by Miss M. and I. Wright.

Miss M. A. Smith, aged 10, Boston.

Attested by Miss M. and I. Wright.

Master C. R. Cotton, aged 15½.

Attested by Mr. F. Reynard, Master of the Mathematical, French, and Commercial School, Reading.

Master C. Metcalf, aged 15¾, Wisbeach.

Attested by his Father.

Master T. Hopkinson, aged 13½, Attercliffe Academy.

Attested by Mr. G. Fieldsend.

Master L. Winterbottom, aged 13¾, Townsend Academy, Rochdale.

Attested by Mr. Armitage.

Master James Going, aged 13¾, Attercliffe Academy.

Attested by Mr. G. Fieldsend.

Miss Green, aged 12¾, Spalding Seminary.

Attested by Miss S. and I. Hebard.

Miss E. Ayre, aged 14, Spalding Seminary.

Attested by Miss S. and I. Hebard.

The above are not placed in order, according to their merits, but rather promiscuously. It gives us sincere pleasure to observe the rapid improvement which many of our young friends are making; we trust they will go on; and we assure them that nothing on our part shall be wanting to reward their respective merits.

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ARTICLE XV.

Theme I. "On the Comforts of Religion," by Master R. Partington, aged 14½, Rochdale Academy, who is desired to accept of books, to the amount of seven shillings.

Every man is seeking after something that may contribute to alleviate his misery, and that may render his life happy and comfortable. Nothing appears to contribute so much to our happiness, both here and hereafter, as religion. When we are deserted by our friends, and forsaken by our relations; when the world frowns upon us, and every thing runs contrary to our wishes, religion is still our consolation, and God our safe refuge. When this earthly tabernacle is destroyed, we have another, not made with hands, eternal in the heavens. We have the enjoyment of the life that now is, and a lively hope of that which is to come. How different is the character of a wicked man, who spends his time in luxury, vice, and folly, and in dishonouring that God whom he ought sincerely to worship!—Though this world affords him some pleasure, yet age lessens the enjoyment of life, and every moment informs him that life cannot be long. Still he often glides on unthinking of the present, and regardless of the future, till death unexpected, judgment unprepared for, and sudden destruction overtake him.—As water is thirsted after by the parched traveller, so are the comforts of religion by the distressed soul.

Addison showed the benign effects of religion; for when on his death-bed, and life was just glimmering in the socket, after a decent and proper pause, he thus addressed a youth who stood near him; may distant ages not only *hear*, but *feel*, the address!—"See in what peace a christian can die." Through divine grace, how great is man—through divine mercy, how stingless is death!

"I never had a sight of my soul," says the Emperor Aurelius, "and yet I have a great value for it, because it is discoverable by its operations, and by my constant experience of the power of God; I have a proof of its being, and a reason for my veneration." With the greatest truth it may be affirmed, that if we desire to pass through this life in peace and comfort, we must rely on God, who will give us those consolations, which are so requisite to human happiness; but, as the immortal Dryden very justly observes,

> "Look round the habitable world,—how few
> Know their own good, and knowing, it pursue!"

THEME II. "On Cowardice," by Miss Dawson, aged 12, Spalding Seminary.

Those are cowards only who, when involved in misfortunes and distress, seek an end to their afflictions in death. It is the part of a brave man, when involved in unavoidable distress, to rise superior to every trouble, to set at defiance the insults of the world, and to place a proper confidence in his own endeavours. For while the coward sinks beneath the weight of his afflictions, the brave man, instead of giving way to the impulse of despair and passion, instead of impeaching the goodness of the Divine Being, cheerfully places a firm reliance upon his own wisdom. Cowardice may be compared to the fighting bulls, which fled from the field of battle just at the moment of victory. Cato, when he found himself conquered by Cæsar, in a fit of despair slew himself; how much more heroic would he have appeared, if he had braved his misfortunes with real courage and fortitude, instead of giving himself up a prey to passion! Rochefoucault observes, "that intrepidity is an extraordinary strength of mind, which prevents the emotion and disorder which the view of great dangers usually excites; it is by this means heroes preserve the use of reason in the most surprising and terrible situations." Whatever misfortunes may befal us, let us never sink under them, but, instead of murmuring at the dispensation of the Supreme Being, let us reflect how many there are placed in worse situations than ourselves; and instead of giving way to despair, let us use our utmost endeavours to extricate ourselves from any difficulties in which we may be involved.

Attested by Miss S. and I. Hebard, Spalding Seminary.

THEME III. "No bad man can be happy," by Miss Ann Ayre, aged 11¼, Spalding Seminary.

It is utterly impossible for the man who practises evil things to be happy in himself, nor can he contribute to the happiness of those around him; for his evil deeds must be uppermost in his thoughts, and, consequently, he must be miserable. Like as the animal wounded by the arrows of the hunter, tries to fly from its pain, but cannot, so does the wicked man endeavour to fly from the reproaches of his own conscience; but it is impossible. We have a striking instance in King Pygmalion, who had a very bad conscience; and, to contribute to his safety, he had fifty persons to *guard* his body; but *this* would not procure him happiness. A contented mind, and a good conscience, will make a man happy in all conditions. To conclude, if we wish to attain happiness, we must act uprightly.

Another good Theme, "On Order," was sent by Miss E. Willerton, aged 14¼, Spalding Seminary.

Attested by Miss S. and I. Hebard.

ARTICLE XVII.

QUESTION 1.

Answered by Master *H. Cotton*, Reading Mathematical School.

The amount of 1*l.* for 1 year, at 5 per cent. is 105, whose logarithm is .021189, which multiplied by 60 gives 1.27134, to which add the log. of 6 = 0.778151, we have their sum = 2.049491, the number answering to which is 112.07 pence = 9*s.* 4*d.* nearly.

Again, by Master *T. Stiles*, Surfleet Academy.

First 60 × log. 1.05 = 60 × .0211893 = 1.271358, the number answering to which is 18.6791, and 18.6791 × .025 = .5669775*l.* = 9*s.* 4*d.* the amount required.

Again, by Master *W. Harrison*, Burton, and Master *Winterbotham*, Rochdale.

By the tables, 18.6791 is the amount of 1*l.* at 5 per cent. for 60 years; which mult. by .025*l.* gives 9*s.* 4*d.* as before.

This question was answered also by Masters *W. Clark*, Reading; *H. Atkin*, Sheffield; *J. Macann*, Long Sutton; *R. Nicholson*, Horsforth; *J. Atkinson*, *T. H. Hopkinson*, and *J. Goring*, Attercliffe Academy; *R. Partington*, Rochdale; *B. Burnell*, *W. Nicholson*, *J. Wheatley*, and *B. Burnley*, Wortley Academy; *J. Bramall*, Lingardswood; *F. Charlton*, *T. Charlton*, and *T. Bell*, Hexham Grammar School.

QUESTION 2.

Answered by all the above young gentlemen, their answers being all very nearly the same.

First, $9 \times 9 \times .7854 \times 210 = 13359.654$ feet, is the solidity of the earth dug out; which at $1\frac{1}{4}d.$ per foot, comes to $69l.\ 11s.\ 7\frac{1}{4}d.$

QUESTION 3.

Answered by Master *F. Charlton*, Hexham Grammar School.

Since all regular polygons of the same number of sides, are similar to each other, and similar figures being as the squares of their like sides, we have 387.107325 (area of a pentagon whose side is 15) : 15^2 : : 16940 (yards in $3\frac{1}{2}$ acres) : 984.6106632; the square root = 99.227549 yards is the length of one side, as required.

Again, by Master *J. Wheatly*, Wortley Academy.

Here, $\surd\left(\frac{3.5 \times 4840}{1.720471}\right) = \surd\left(\frac{16940}{1.720471}\right) =$ $\surd(9846.106632) = 99.2275$ yards.

Again, by Master *J. Atkinson*, Attercliffe.

First, $3\frac{1}{2}$ acres = 16940 yards, then $\surd\left(\frac{16940}{1.720471}\right)$ $= 99.2275$ yards.

Again, by Master *R. Nicholson*, Horsforth.

The area = $3\frac{1}{2}$ acres is = 16940 yards, hence the side will be = $\surd 16940 \times .76238 = 99\frac{1}{4}$ yards, nearly.

Again, by Master *T. Stiles*, Surfleet Academy.

Here $3\frac{1}{2}$ acres = 16940 yards, then, by mensuration, $16940 \div 172047$ (the area when the side is 1) = 9846.106632 is the square of one side, and

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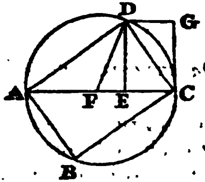
$\sqrt{(9846.106632)} = 99.2275$ yards, is the length of each side as before.

This question was answered by Master *W. Scofield*, Farnley, near Huddersfield, and by all those young gentlemen who answered the first question.

QUESTION 4.

Answered by Master *J. Bramall*, Lingardswood.



Construction. With A F as radius $= 25$, describe the circle A B C D, erect C G perpendicular to A C, $= 24$, draw G D parallel to A C, meeting the circle in D; join A D, C D, make A B $=$ D C, and B C $=$ A D, and join A B, B C, and A B C D will evidently be the rectangle required.

Calculation. Let fall the perpendicular D E, and join D F; then, in the right-angled triangle, D E F, we have D E $= 24$, and D F $= 25$, therefore, F E $= \sqrt{(25^2 - 24^2)} = 7$; consequently A E $= 25 + 7 = 32$, and E C $= 25 - 7 = 18$. Hence A D $= \sqrt{(32^2 + 24^2)} = 40$ and D C $= \sqrt{(18^2 + 24^2)} = 30$, and the perimeter $= 140$ chains; which at 11¼*d.* per rod comes to 27*l.* 8*s.* 4*d.*

In nearly the same manner it was answered by Masters *T. Stiles, J. Macann, R. Partington, F. Charlton, T. Charlton,* and *T. Bell.*

Again, by Master *Winterbotham.*

Put $x =$ one side, then $\frac{1200}{x}$ is the other, and $\frac{1440000}{x^2} + x^2 = 2500$ by the question. Put $x^2 = y$, and, by reduction, we shall have $y^2 - 2500y = -1440000$, from whence $y = 1600$, and $x = 40$; therefore the other side is 30, and the perimeter 140, &c.

Again, by Master *W. Harrison*, Burton Pidsea.

Put 1200 chains the content of the field $= a$, $x =$ its breadth, and 50 the diagonal $= d$; then, $\frac{a}{x}$ is its length, but $\sqrt{(d^2 - x^2)}$ is its length also, therefore $\frac{a}{x} =$

$\sqrt{(d^2 - x^2)}$, whence $x^4 - d^2x^2 = -a^2$ and $x = 30$; also the length $= 40$, as before.

In this manner it was answered by Masters *Atkin*, *R. Nicholson*, *J. Atkinson*, *J. Going*, *B. Burnell*, *W. Nicholson*, *J. Wheatley*, and *B. Brumley*.

Master *R. Nicholson*, and Master *W. Harrison*, are each of them requested to send for any book, the price of which does not exceed five shillings.

On the comparative Strengths of Planks when whole, and when slit into Boards.

SEEING two persons carrying planks the other day, one at each end, some of which were whole and some slit into boards, I observed that those which were slit, bent much more than those which were not. This circumstance led me to consider their comparative strengths, as in the following

QUESTION.

What will be the comparative strength of a plank 3 inches thick, supported at each end, with its flat side downwards when whole, and also when slit into three boards, one of $\frac{1}{2}$ an inch thick, another 1 inch, and the other $1\frac{1}{2}$ inches, when lying on each other; supposing no waste in slitting?

ANSWER.

By Emerson's Mechanics, "the strength is as the square of the depth;" therefore, when the plank is whole, we shall have $3^2 = 9$ for its comparative strength; also, $\frac{1}{4} + 1 + \frac{9}{4} = 3\frac{1}{2}$ is the comparative strength of the boards, or of the plank when slit; whence the strength of the whole, is to the same when slit, as 9 to $3\frac{1}{2}$, or as 18 to 7.

By inserting the above, you will greatly oblige,
Your very humble Servant,

Lingardwood. JOHN BRAMALL.

This paper, by Master Bramall, will show our juvenile friends how very easy it is to find the comparative strengths of pieces of timber of different dimensions. Many similar examples are given in Marrat's Mechanics, for the use of schools. When the breadths are different, the strengths are as the "breadths and square of the depths," jointly.

PRIZE SUBJECTS

TO BE ANSWERED IN NO. IX.

ARTICLE XVIII.

Any young gentleman, under 16 years of age, who sends the best poetical translation of "Virgil's Fifth Eclogue," will be entitled to a PRIZE.

ARTICLE XIX.

The best translation of the following piece, by young ladies or gentlemen not 16 years old, will be entitled to a PRIZE.

Pendant cette navigation, Télémaque disoit à Mentor. Je suis très-persuadé que le point essentiel du gouvernement, est de bien discerner les différens caractères d'esprits, pour les choisir et les appliquer selon leurs talens: mais il me reste à savoir comment on peut se connoître en hommes.

Alors Mentor lui répondit: Il faut étudier les hommes pour les connoître; et pour les connoître il en faut voir, et traiter avec eux. Les rois doivent converser avec leurs sujets, les faire parler, les consulter, les éprouver par de petits emplois dont ils leurs fassent rendre compte, pour voir s'ils sont capables de plus hautes fonctions. Comment est ce mon cher Télémaque, que vous avez appris à Ithaque à vous connoître en chevaux? c'est à force d'en voir et de remarquer leurs défauts et leurs perfections avec des gens expérimentés. Tout de même parlez souvent des bonnes et des mauvaises qualités des hommes avec d'autres hommes sages et vertueux, qui aient long-tems étudié leurs caractères, vous apprendrez insensiblement comme ils sont faits, et ce qu'il est permis d'en attendre. Qui est-ce qui vous a appris à connoître les bons et les mauvais poëtes?

C'est la fréquente lecture, et la réflexion avec des gens qui avoient le goût de la poésie. Qui est ce qui vous a acquis le discernement sur la musique? C'est la même application à observer les divers musiciens. Comment peut-on espérer de bien gouverner les hommes, si on ne les connoit pas! et comment les connoîtra-t-on si l'on ne vit jamais avec eux? Ce n'est pas vivre avec eux que de les voir en public, où l'on ne dit de part et d'autre que des choses indifférentes et préparées avec art: il est question de les voir en particulier, de tirer du fond de leur cœur toutes les ressources secrètes qui y sont, de les tâter de tous côtés, de les sonder pour découvrir leurs maximes. Mais pour bien juger des hommes, il faut commencer par savoir ce qu'ils doivent être, il faut savoir ce que c'est que vrai et solide mérite, pour discerner ceux qui en ont d'avec ceux qui n'en ont pas.

On ne cesse de parler de vertu et de mérite sans savoir ce que c'est precisément que le mérite et la vertu. Ce ne sont que de beaux noms, que des termes vagues pour la plûpart des hommes, qui se font honneur d'en parler à toute heure. Il faut avoir des principes certains de justice, de raison et de vertu, pour connoître ceux que sont raisonnables et vertueux. Il faut savoir les maximes d'un bon et sage gouvernement pour connoître les hommes qui ont ces maximes et ceux qui s'en éloignent par une fausse subtilité. En un mot, pour mesurer plusieurs corps, il faut avoir une mesure fixe: pour juger, Il faut tout de même avoir des principes custans auxquels tous nos jugemens se reduisent. Il faut savoir précisément quel est le but de la vie humaine, et quelle fin on doit se proposer en gouvernant les hommes. Ce but unique et essentiel est de ne vouloir jamais l'autorité et la grandeur pour soi; car cette recherche ambitieuse n'iroit qu'à satisfaire un orgueil tyrannique: mais on doit se sacrificer dans les freines infinies du gouvernement, pour rendre les hommes bons et heureux. Autrement on marche à tâlons et au hasard pendant toute la vie; on va comme un navire en pleine mer, qui n'a point de pilote, qui ne consulte point les astres, et à qui toutes les côtes voisines sont inconnues; il ne peut faire que naufrage.

ARTICLE XX.

THE best Theme or Essay, *on any subject*, by young ladies or gentlemen not 16 years old, will be entitled to a PRIZE.

ARTICLE XXI.

THE best copy of verses in English, *on any subject*, by young ladies or gentlemen not 16 years old, will be entitled to a PRIZE.

ARTICLE XXII.

THE best solutions to the following questions, by young gentlemen not 16 years old, will be entitled to a PRIZE.

QUESTION 1. By Master J. Macann, Long Sutton.

Bought a house for a certain sum, and sold it again for 171*l.* by which I gained as much per cent. as the house cost; what did I give for the house?

QUESTION 2. By Master L. Winterbotham, Rochdale.

Find the side of the greatest square that can be inscribed in a triangle whose base and perpendicular are 12 and 8 respectively.

QUESTION 3. By Master J. Atkinson, Attercliffe Academy.

What length of cord will lay out an ellipse containing *half an acre*, by means of two pins fixed in the foci; the transverse and conjugate diameters being as 10 to 8?

QUESTION 4. By Master W. Harrison, Burton Pidsea.

What two numbers are those, whose sum, difference, and product, are as 2, 3, and 10 respectively?

Miscellaneous Correspondence, &c.

BIOGRAPHICAL MEMOIR OF MARGARET COUNTESS OF RICHMOND,

MOTHER OF KING HENRY VII.

MARGARET, daughter and heiress of John Beaufort, Duke of Somerset, and Lord of Deeping in the county of Lincoln, and great granddaughter of John of Gaunt, was born at Bletshoe in Bedfordshire, in 1441. Her education, though sufficient for that age, was not very extensive. She was mistress of French, and had some knowledge of Latin; but her abilities were, according to Ballard, superior to her acquirements, and her disposition perfectly amiable.

Her good qualities and vast inheritance procured her many advantageous offers, particularly the son of the celebrated favourite of Queen Margaret, William Duke of Suffolk; and Edmund Tudor, Earl of Richmond, half brother of king Henry VI. Being in doubt to which of these two she should give the preference, she consulted an old lady, who recommended her to St. Nicholas, the patron of virgins. The saint very good naturedly made his appearance in the habit of a bishop, and advised her to marry Edmund. This story is related by Ballard *, on the authority of a popish bishop, and the great Sir Francis Bacon: but it is so absurd, as to be even below the ridicule with which Lord Orford has assailed it †. By this marriage, and in consequence of her birth, she became allied within the fourth degree, to thirty kings and queens, besides earls, marquis-

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* *Vide* Ballard's British Ladies, p. 7, 8, 8vo. edit.

† *Vide* Royal and Noble Authors, article Margaret Countess of Richmond and Derby.

ses, dukes, and princes; and as Henry VII. was the offspring of this marriage, she became allied in her posterity to as many more.

Her first husband dying in 1456 *, she married Sir Henry Strafford, second son of Humphrey Strafford, the great Duke of Buckingham. Soon after the death of this husband, she married Thomas Lord Stanley, who after her son Henry's accession to the throne, was created Earl of Derby, and died in 1504.

Though this lady's education was so defective as not to afford means of original composition, her love of piety, and desire to increase it in England, induced her to translate from the French, a book called "*Speculum Aureum Piccatorum*," or, a "Mirror of Gold for a sinful Soul;" and the third and fourth books of Dr. Gerson's "Treatise of the Imitation of Jesus Christ." She also composed, in the twenty-third year of the reign of Henry VII. "Orders for great Estates of Ladies and noble Women, for their Precedence, Attires, and wearing of Barbes at Funerals, over the Chin, and under the same."

These performances, though they receive a certain recommendation from the quality and devotion of their author, would not have preserved her fame to posterity; but her munificence, equally influenced by piety and good sense, induced her to make those public foundations and endowments, which will cause her name to be repeated with gratitude, while learning and religion yet claim an asylum in Britain.

Her principal acts were the foundation of two colleges, Christ's and St. John's †, in the university of Cambridge. She also instituted lectureships in divinity at Cambridge and Oxford *, and afforded a maintenance to many poor students. She established at Cambridge a perpetual public preacher †. She built an alms-house at Westminster for poor women, which was afterwards turned into a lodging house for the singing men of the college; and founded a free school at Wymbourn in Dorsetshire. She lived some time at Torrington, in Devonshire; and, pitying the minister for his long walk from the parsonage house to the church, gave to him and his successors the manor-house, and the lands belonging, lying close to the church.

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* Surely here is some mistake, or the Countess would be only 15 years old at the time of her first husband's death. *Ed.*

† Founded in 1505—the original obligation of *John Sycling*, first master of this college, is yet extant among the archives, and bears date Sept. 4, anno 22 Henry VII. The endowments of this college were very liberal, and are enumerated in the Countess's will; the Abbeys of *Creyke* and *Domus Dei* formed part thereof; the first of these was given her by her son Henry VII.

These virtuous deeds breathe so true a spirit of piety and charity that the superstitions which marked Margaret's character, if they claim notice, can be considered only as the excess of the same principles. She is commonly drawn in the habit of a nun, and was admitted into the fraternity of five religious houses, Westminster, Crowland ‡, Durham, Wymbourn, and the Charter-house. She was at prayers soon after five o'clock in the morning, and went through the religious offices of the church of Rome with so much strictness, and added so many private devotions, as to occasion bodily indispositions. She had girdles and under-garments of hair; and when in health, constantly wore one next her person on certain days in every week: so that she declared to her confessor that her skin was frequently lacerated.

Her life was chequered by all the turns of good and ill-fortune, incident to the troublesome period at which

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* This lectureship was instituted in the year 1502, (18 Hen. VII.) on the feast of the nativity, and endowed with twenty marks *per ann.* payable by the Abbot and Convent of Westminster, which house she had endowed with a yearly revenue of 87*l.*

The lectureship at Oxford was founded at the same time, and with *the same endowment.*

† Established 30th Oct. 1504, with a stipend of 10*l. per ann.* payable by the Abbot and Convent of Westminster. The duty of this preacher was to preach, at least six sermons every year, at several churches (specified in the foundation) in the dioceses of London, Ely, and Lincoln; but the duty is now altered to one sermon in the university at the beginning of Easter.

‡ The Countess of Richmond and her mother Margaret (Duchess Dowager of Somerset) were received into the sisterhood at Croyland, in the year 1464—*vide* Gough's Croyland, p. 71.

she lived. She had, at length, the happiness to see her beloved son unexpectedly advanced to the throne of England, and weathering all the storms which arise from a forcible acquisition, and a disputed title, end a reign of twenty-three years by a peaceful death. She survived him but three months, dying the 29th of June, 1509, aged 69, and was buried in her son Henry VIIth's chapel at Westminster. Her epitaph was composed by the celebrated Erasmus *, who (as it is entered in an old book of accounts) had a reward of twenty shillings for writing it. Her funeral sermon was preached by Bishop Fisher, and contained a just delineation of her character, and an ample narrative of her charities and virtues †.

N.

SOME REMARKS

ON THE

PHYSIOLOGY OF THE EGG.

Mr. I. A. Paris, in a letter to Mr. Maton, has made some very ingenious observations on the physiology of the egg, which I have no doubt will be entertaining to the readers of the Enquirer, and have therefore forwarded the following compressed account thereof.

The albuminous portion of the egg, according to Mr. Paris, is destined not only to afford nourishment to the ovular embryo, but also to assist in maintaining that equable temperature which is so necessary to the future evolution of the germ; because, being a very feeble conductor of caloric, "it retards the escape of heat, prevents any sudden transition of temperature, and thus averts the fatal chills which the occasional migrations of the parent might induce." That the principal use of the follicle or air-bag, at the obtuse end of the egg, is to oxygenate the blood of the chick, if not demonstrated, is rendered highly probable from the circumstance of the bag having been found, by experiment, to contain *atmospheric air*. This follicle, as far as Mr. Paris's observation has extended, appears to be "of greater magnitude in the eggs of those birds which place their nests on the ground, and whose young are hatched fledged, and capable of exerting their muscles as soon as they burst from their shell, than in the eggs of these whose nests are generally built on trees, and whose progeny are born blind and forlorn. Thus the *folliculi* in the eggs of fowls, partridges, and moor-hens, are of considerable extent, whilst those in the eggs of crows, sparrows, and doves, are extremely contracted. The chick, therefore, of fowls and partridges, has a more perfect plumage, and a greater aptitude to locomotion, than the callow nestlings of doves and sparrows."

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* Erasmus was Lady Margaret's professor at Cambridge at the time of her death.

† This sermon was printed by Wynkin de Worde, who was printer to the Countess Margaret—it is very rare—*a fac-simile* of this sermon, with a preface containing an account of her different charities, and a list of her professors at Cambridge and Oxford—was printed in small 8vo. by A. Bosville, in 1708. This too is rare.

With Fordyce, Mr. Paris allows that a deficiency of calcareous matter is the cause of the absence of the involucrum or shell of the egg, which may occasionally be observed: though this deficiency, he contends, originates not in the privation of the calcareous principle, but in some internal state of the system. "A hen," says he, "which I kept for some experiments, had its leg broken in two parts. The fracture was carefully bandaged; three days subsequent to which, several eggs destitute of shells were found on the premises. The hen had deposited no perfect eggs, nor were there any other birds from which these yolks could have proceeded; I therefore conjectured, that all the *calcareous matter* designed for the formation of the shell had been employed in the regeneration of the bone."

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REMARKS

MADE DURING

A TOUR IN ASIA MINOR,

FROM MR. WALPOLE'S MS. JOURNAL.

During my journey in Asia, I took up my abode for the night in the Khâns or caravanserais, choosing a room to myself in these bad substitutes for inns, rather than the private houses of the Turks, where my Janissary procured me admittance. For although the Turks are quiet and inoffensive, yet any thing is preferable to sleeping in a small room with half-a-dozen of them; or to a cross-legged posture at meals, round a low table, eating spoon-meats, of which their repasts generally consist. As the road I travelled was not much frequented, I was forced to stop at the houses of individuals; and arriving generally at sun-set, I found them beginning their supper: their dinner is at ten in the morning, as they rise at break of day. Sometimes a village afforded a small hut of mud and straw, purposely built for travellers: half of this was raised about two feet from the ground, for men to lie on; the other half accommodated three or four horses. In the great towns it was necessary to go first to the governor with some present, accompanied by my Janissary. At Guzel-hissar I waited on the Aga, who, after some conversation with my Janissary, ordered a Greek (his tailor) to receive me into his house, where I remained some days. Presents to the servants are always given. At Melasso, I waited on the governor; it was the time of the fast of the Ramadan: I found him sitting on his divân, counting his beads of thick amber: a pipe was brought to me, but not to him, as he did not smoke, eat, nor drink, from sun-rise to sun-set. He showed me guns and pistols made in England: these some Englishmen had brought to Melasso, coming to buy horses for the army on the Egyptian expedition. This fast of the Ramadan I found was most strictly observed. My Janissary was not so scrupulously abstemious as my guide, who never even took snuff until the sun was below the horizon. I passed the evenings writing my journal, and reading some books of travels I had with me. The Turkish peasants would sometimes bring medals: these they found in the fields. The conversation of the Turks turned generally, as I found from my interpreter, on the affairs of the village, and its neighbourhood. The women never appeared. I saw some by the road side; and in the villages young children made their appearance, with strings of copper money around their heads; and the nails, both of their hands and feet, dyed of a reddish colour, with *henna*, the leaves of which are powdered and formed into a paste, and then applied. This is a custom of great antiquity: Hasselquist says he saw the nails of some mummies dyed in this manner. Although the Turks, in their intercourse with each other, strictly adhere to the practice of taking off their slippers in a room, (a custom of the ancients; see Martial, lib. iii. *deposui soleas*) yet they dispense with it frequently in the case of European travellers.

Besides rice and fowls, it is possible to procure, at many of the villages and towns in Asia Minor, *yourt*, or sour milk, called in Greek *ὀξύγαλα*; *caimac*, or coagulated cream, in Greek, *αφρόγαλα*; and soft cheese, *χλωρὸ τύρι*, a literal translation of the *caseus viridis* of Columella. Mutton is universally preferred to beef; this, in general, is coarse and bad tasted: the former is double the price of the latter, and is two pence the pound.

A Greek labourer receives from thirty-five to forty paras a day, nearly fifteen pence: he works only two-thirds of the year; the other third consists of holidays. During the four fasts, of which that in Lent is the most strictly observed, he eats shell-fish, caviar (the roe of the sturgeon), pulse, and anchovies.

I observed but few Greek villages in Asia Minor: the Greeks all seek the great towns, to avoid more easily the different means of oppression resorted to by the Turkish governors; whose short residences in their provinces are spent, not in countenancing or furthering any improvement or plans of amelioration in the condition of those subject to them, but in exacting every thing they can, to repay themselves for the sum which the Porte takes from them; and in carrying away what wealth they are able to amass. It is difficult to ascertain what sum any given province pays annually to the Porte; but a near conjecture may be made, by adding the *haratch* (capitation tax) to the sum which the governor stipulates to pay every year.

The Turks, (as far as my experience carried me) show no disposition to molest or offend a traveller. Something contemptuous may at times be observed in their manner. But a great change for the better, in their general deportment, is to be attributed to their never being now exasperated by the attacks of Corsairs or pirates on the coast.

No people living under the same climate, and in the same country, can be so opposite as the Greeks and Turks. There is in the former a cringing manner, and yet a forwardness, disgusting to the gravity and seriousness of the latter. The Turks treat the Armenians, who conduct themselves generally with great propriety and decorum, with much less harshness than they show to the Greeks. Their present condition is certainly not the most favourable point of view for considering the character of the Greeks; and their faults, which are those of their unfortunate situation, would disappear under more favourable circumstances, and a different government. When in office and authority, they are not so devoid of insolence to their countrymen as might be wished. The *codja-bashis* in the Morea are, many of them, tyrannical to the other Greeks. The treatment which the Jews experienced at their hands, in the time of the Greek empire, is that which the Greeks now meet with from the Turks. "No one," says Benjamin of Tudela, "dares go on horseback, but the imperial physician; and the Jews are hated in the town by all the Greeks, without any regard to their good or bad character," p. 30, *as cited by Niebuhr*.

Neither hay nor oats are known to the Turks; nor has any nation in the east ever used them for their horses. "They brought barley also and straw for the horses." 1 Kings iv. 28. Homer may be consulted *Iliad* E. 195; and Juvenal, *Sat.* VIII. (*jumentis orde lassis*). Niebbuhr says, he saw no oats in Arabia; he did not observe tobacco so much cultivated as corn and cotton. The tobacco plantations require much attention; but are very productive. After gathering the leaves, the stalks stand and rot, and, by the salt which they contain, fructify the earth. The crop from a tobacco plantation is esteemed worth as much as the product of the same land sown with corn. An acre of moderately good ground is said to yield about two hundred okes of cotton: an oke is two pounds and three quarters; and the cotton may be worth nearly two piastres an oke.

The olive-tree flourishes in a chalky soil. In summer, a hollow is dug round the tree, to receive water: the fruit is beaten off with long sticks, and not gathered. The olive-presses, which I saw, consist of a circular basin, of twelve feet in diameter; and from the centre rises a tall strong piece of wood, to which a large stone, like a mill-stone, is attached. A horse goes round the basin, and, as he moves, the perpendicular piece of wood receives a rotatory motion; this is communicated to the stone.

Locusts are called by the Greeks *κατάρα (a curse.)* They had laid waste the country about Adramyttium and Pergamus. Proceeding in a straight line, and stopped by no impediment, they devoured every kind of vegetation: all means used to destroy them were fruitless; if some part were killed by fire and smoke, kindled expressly, still, however, multitudes escape. In July, the Archipelago was covered for some distance with swarms, which the wind had driven into the sea. They were larger than grasshoppers; with legs and bodies of a yellow colour: their wings were brown and spotted. The Turks have not learned to eat them; but with the Arabs, the locust is boiled or roasted, and eaten with salt. Europeans are surprised at this; as the Arabs are, when they hear that we eat crabs, oysters, and lobsters.

The storks, while I was in the Troad, were building their nests on the houses at Bournabashi. The venera-

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tion paid to these birds by the Mahometans is well known. The Thessalians (says Plutarch, *de Iside et viride)* esteem them because they destroyed serpents. The noise made by the upper and under parts of their bill (" *crepitante ciconia rostro,*" *Ovid)* is well compared, by Shaw, to that of a pair of castanets.

On the great roads near Smyrna, which lead to the interior, are to be met frequent caravans of camels: these are preceded by an ass, and round their necks are strings of beads, with a bell. I mention this, because the same ornament is seen on the camels sculptured at Persepolis. The camel of the northern part of Asiatic Turkey is a stronger animal than that of the south: the latter carries not more than five hundred pounds weight; but the former from eight to nine hundred. Near Moolah I met a caravan laden with iron ore.

The country, about Smyrna, is well cultivated; most of it laid down in cotton and corn land. They plough, as I was told, with a pair of oxen, more than an acre a day, and the manure they use is burnt weed. The whole country was now (April) wearing a beautiful appearance; the anemone, ranunculus, and hyacinth, were seen in the fields, and by the road side. Having slept one night in the open air, by a fire which the driver of the caravan kindled with dried horsedung, I arrived the next day at the banks of the Hermas; I crossed it at the ferry, and reached Menomen; whence I sailed to Smyrna in an hour. From Menomen, boats come daily to Smyrna, in the season, laden with water melons. From the seed a liquor is made, which is sold about the streets of Smyrna.

The fields and gardens about Smyrna are planted with almond, olive, fig, and pomegranate trees. The hills round Smyrna are of granite. At a village to the south of it, called Beejaw, is a very fine grove of cypress trees; this tree, so great a favourite with the Turks in their burying-grounds, is there planted on account of its balsamic smell; its wood was always prized in the east for its durability. The Egyptians made their mummy chests of it; and the Athenians buried those who had fallen in war in coffins of this wood. Between Smyrna and Bournabat, a village seven miles to the north-east of it, is a very large cemetery, with remains of antiquity in it, and Greek inscriptions. The Turkish burying grounds are in general extensive, as they never put a body where one has been already deposited, and are also offensive, as they do not put them deep in the ground.

BIBLIOGRAPHICAL AND LITERARY ANECDOTES.

BY SIVAD.

No. IV.

The instrument by which Queen Jane was proclaimed Queen of England, &c. setting forth the reasons of her claim, and her right to the crown.*

Lady Jane Grey was eldest daughter of Henry Lord Grey, Duke of Suffolk, and the Lady Frances, daughter and one of the coheirs of Charles Brandon, Duke of Suffolk, by Mary his wife, Queen Dowager to Lewis XII. of France, and youngest daughter of King Henry the Seventh. The aspiring and haughty Duke of Northumberland knowing the claims of Lady Jane to the crown of England, and thinking to exalt his own family by the match, proposed a marriage between her and his fourth son Lord Guildford Dudley, which having accomplished, his thoughts were next directed towards Edward VI., who, through his policy, consented to transfer the right to the crown to his cousin Lady Jane, in defiance to the natural right of his two sisters Mary and Elizabeth. On the death of Edward it was with the greatest reluctance that this unambitious woman, for whom literature had far greater charms than dominion †, consented to assert her claims; but overcome at last by the entreaties, rather than the reasons, of her father, her father-in-law, and above all her husband, she waved all objection, and the following proclamation was issued:

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* From the first edition in three folio sheets: reprinted in the Harleian Miscellany.

† The learned Ascham, before he went into Germany, called on

JANE, by the grace of God, Queen of England, France, and Ireland, Defender of the Faith, and of the Church of England, and also of Ireland, under Christ, in earth the supreme head. To all our most loving, faithful, and obedient subjects, and to every of them, greeting. Whereas our most dear cousin, Edward the Sixth, late King of England, France, and Ireland, Defender of the Faith, and in earth the supreme head, under Christ, of the Church of England and Ireland, by his letters patent, signed with his own hand, and sealed with his great seal of England, bearing date the twenty-first day of June, in the seventh year of his reign, in the presence of the most part of his nobles, his counsellors, judges, and divers other grave and sage personages, for the profit and surety of the whole realm thereto assenting, and subscribing their names to the same, hath by the same his letters patents recited, that forasmuch as the imperial crown of this realm, by an act made in the thirty-fifth year of the late King, of worthy memory, King Henry the Eighth, our progenitor and great uncle, was, for lack of issue of his body lawfully begotten, and for lack of issue of the body of our said late cousin King Edward the Sixth, by the same act limited, and appointed to remain to the Lady Mary, his eldest daughter, and to the heirs of her body lawfully begotten; and, for default of such issue, the remainder thereof to the Lady Elizabeth, his second daughter, and to the heirs of her body lawfully begotten, with such conditions as should

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Lady Jane at Broadgate, in Leicestershire, to take his leave, whom he found reading *Plato* in Greek, with as much delight as some gentlemen would read a merry tale in *Boccace*, whilst the whole of the family were hunting in the Park. Being asked by him why she would lose such pastime in the Park? smiling, she answered, "All their sport is but a shadow to that I find in Plato: alas! good folk, they never felt what true pleasure meant."

be limited and appointed by the late King, of worthy memory, King Henry the Eighth, our progenitor and great uncle, by his letters patents, under his great seal, or by his last will in writing, signed with his hand. And forasmuch as the said limitation of the imperial crown of this realm being limited (as is aforesaid) to the Lady Mary and Lady Elizabeth, being illegitimate, and not lawfully begotten, for that the marriage had between the said late King, King Henry the Eighth, our progenitor and great uncle, and the Lady Catharine, mother to the said Lady Mary, and also the marriage had between the said late King, King Henry the Eighth, our progenitor and great uncle, and the Lady Anne, mother to the said Lady Elizabeth, were clearly and lawfully undone, by sentences of divorces, according to the word of God, and the ecclesiastical laws; and which said several divorcements have been severally ratified and confirmed by authority of parliament, and especially in the twenty-eighth year of the reign of King Henry the Eighth, our said progenitor and great uncle, remaining in force, strength, and effect, whereby as well the said Lady Mary, as also the said Lady Elizabeth, to all intents and purposes are, and have been, clearly disabled, to ask, claim, or challenge the said imperial crown, or any other of the honours, castles, manors, lordships, lands, tenements, or other hereditaments, as heir or heirs to our said late cousin, King Edward the Sixth, or as heir or heirs to any other person or persons whatsoever, as well for the cause before rehearsed, as also for that the said Lady Mary and Lady Elizabeth were unto our said late cousin but of the half-blood; and therefore, by the ancient laws, statutes, and customs of this realm, be not inheritable unto our said late cousin, although they had been born in lawful matrimony, as indeed they were not, as by the said sentences of divorce, and the said statute of the twenty-eighth year of the reign of King Henry the Eighth, our said progenitor and great uncle, plainly appeareth.

And forasmuch also as it is to be thought, or at the least much to be doubted, that the said Lady Mary or Lady Elizabeth should hereafter have and enjoy the said imperial crown of this realm, and should then happen to marry a stranger, born out of this realm, that then the same stranger, having the government and the imperial crown in his hands, would adhere and practise, not only to bring this noble free realm into the tyranny and servitude of the Bishop of Rome, but also to have the laws and customs of his or their own native country or countries to be practised, and put in use within this realm, rather than the laws, statutes, and customs, here of long time used; whereupon the title of inheritance of all and singular the subjects of this realm do depend, to the peril of conscience, and the utter subversion of the commonweal of this realm. Whereupon our said late dear cousin weighing and considering with himself, what ways and means were most convenient to be had for the stay of the said succession in the said imperial crown, if it should please God to call our said late cousin out of this transitory life, having no issue of his body, and calling to his remembrance that we, and the Lady Catharine, and the Lady Mary, our sisters, being the daughters of the Lady Frances, our natural mother, and then and yet wife to our natural and most loving father, Henry Duke of Suffolk, and the Lady Margaret, daughter of the Lady Eleanor, then deceased sister to the said Lady Frances, and the late wife of our cousin, Henry Earl of Cumberland, were very nigh of his grace's blood, of the part of his father's side, our said progenitor and great uncle; and being naturally born here within the realm, and for the very good opinion our said late cousin had of our and our said sister's and cousin Margaret's good education, did therefore, upon good deliberation and advice herein had and taken, by his said letters patents declare, order, assign, limit, and appoint, that if it should fortune himself our said late cousin, King Edward the Sixth, to decease, having no issue of his body lawfully begotten, that then the said imperial crown of England and Ireland, and the confines of the same, and his title to the crown of the realm of France, and all and singular honours, castles, prerogatives, privileges, pre-eminencies, authorities, jurisdictions, dominions, possessions, and hereditaments, to our said late cousin, King Edward the Sixth, or to the said imperial crown belonging, or in anywise appertaining, should, for lack of such issue of his body, remain, come, and be unto the eldest son of the body of the said Lady Frances, lawfully begotten, being born into the world in his lifetime, and to the heirs male of the body of the same eldest son, lawfully begotten, and so from son to son, as he should be of certainty in birth, of the body of the said Lady Frances, lawfully begotten, being born into the world in our said late cousin's lifetime, and to the heirs male of the body of every such son, lawfully begotten; and for default of such son born into the world, in his lifetime, of the body of the said Lady Frances, lawfully begotten, and, for lack of heirs male of the body of every such son, lawfully begotten; and, for default of such son born into the world, in his lifetime, of the body of the said Lady Frances lawfully begotten, and for lack of heirs male of every such son lawfully begotten, that then the said imperial crown, and all and singular other the premises, should remain, come, and be to us, by the name of the Lady Jane, eldest daughter of the said Lady Frances, and to the heirs male of our body, lawfully begotten, and for lack of such heir male of our body, lawfully begotten, that then the said imperial crown, and all other the premises, should remain, come, and be, to the said Lady Catharine, our said second sister, and to the heirs male of the body of the said Lady Catharine, lawfully begotten, with divers other remainders, as by the same letters patents more plainly and at large it may and doth appear. Sithens, the making of which letters patents, that is to say, on Thursday, which was the sixth day of this instant month of July, it hath pleased God to call to his infinite mercy our said most dear and intirely beloved cousin, Edward the Sixth, whose soul, God pardon, and forasmuch as he is now deceased, having no heirs of his body begotten, and that also there remain, at this present time, no heirs lawfully begotten of the body of our said progenitor and great uncle, King Henry the Eighth; and forasmuch also as the said Lady Frances, our said mother, had no issue male begotten of her body, and born into the world, in the lifetime of our said cousin, King Edward the Sixth, so as the said imperial crown, and other the premises to the same belonging, or in anywise appertaining, now be, and remain to us in our actual and royal possession, by authority of the said letters patent: We do therefore, by these presents, signify unto all our most loving, faithful, and obedient subjects, that like as we, for our part, shall, by God's grace, show ourselves a most gracious and benign Sovereign, Queen, and Lady, to all our good subjects in all their just and lawful suits and causes, and to the uttermost of our power shall preserve and maintain God's most holy word, christian policy, and the good laws, customs, and liberties of these our realms and dominions; so we mistrust not but they, and every of them, will again, for their parts, at all times and in all cases, show themselves unto us, their natural liege Queen and Lady, most faithful, loving, and obedient subjects, according to their bounden duties and allegiance, whereby they shall please God, and do the thing that shall tend to their own preservations and sureties; willing and commanding all men of all estates, degrees, and conditions, to see our peace and accord kept, and to be obedient to our laws, as they tender our favour, and will answer for the contrary, at their extreme perils. In witness whereof, we have caused these our letters to be made patents. Witness ourself at the Tower of London, the tenth day of July, in the first year of our reign.

God save the Queen.

Anno Domini M.D.LIII. *Londini in ædibus Richardi Graftoni Reginæ a typographia excusum. Cum privilegio ad imprimendum solum.*

Grafton, the printer of this proclamation, though he had only discharged the duty of his office as royal printer, on the accession of Queen Mary to the crown lost a debt of 300*l.* owing him from the crown at the time of King Edward's death, and was immediately deprived of his place and patent, and John Cawood put in his place. The printing of this instrument, it seems, was considered as little less than high treason in those days. Besides the loss of his debt and patent, he was prosecuted, and imprisoned six weeks in the Fleet Prison.

Nash's (T.) Collections for the History of Worcester, 2 vols. folio.—Lond. 1781.

To this work, in 1799, was added a supplement, printed for White, of Fleet Street, price 1*l.* 1*s.* large paper. Copies of Nash's book are now worth from 10 to 12 guineas.

Doctor Barton being in company with Nash soon after the publication of his two heavy folios, the warden humorously observed to the doctor, that his publication was deficient in several respects. Dr. Nash, as was but natural, endeavoured to defend his volumes in the best manner he was able. "Pray, doctor, are you not a justice of the peace?"—"I am," replied the doctor. Then says Barton, "I advise you to send your work to the *house of correction.*"

Gems in the Collection of the Duke of Devonshire, engraved by Gosmond, on 99 plates, 4to.

The engraver, a Frenchman, never completed the collection. After cheating his noble patron, who had advanced him large sums of money, he absconded with the copper-plates, and was never afterwards heard of: it is supposed that he was lost on his passage to the Continent. The plates were done by order of William Duke of Devonshire.

A copy, mostly proofs, sold at Leigh and Sotheby's auction room, in 1804, to the Duke of Devonshire, for 42*l.*

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Observations on Bibliography.

There are two sorts of knowledge to be attained by him who aspires to the character of a true bibliographer; one entirely consists in the outside and form of the book, and its value is known from its date, the form of the letters, or from the notes, and frequently from some typographical error; these are qualities which place it in the rank of rare or curious books, and fix its pecuniary value. The other branch of knowledge consists in knowing *what* are the most proper books for instruction, *where the* subjects are most clearly presented and profoundly discussed; by the aid of what works it is possible to embrace the origin of a science, follow it in its developements, and attain the summit of perfection. It would, without doubt, be an immense advantage were these two branches of knowledge always united; but experience shows us that they rarely are so, and that the first of the two has been much more cultivated than the second. We possess, on the subject of rare and curious books, antiquities, and literary jewels, (if the term may be allowed) much better instructions than we have relative to books of real science. In searching for the cause of this difference, it may perhaps be traced to the passion that rich and vain men have shown for possessing books without being capable of reading them, for such men it has been found necessary to create a sort of library composed of objects, which, under the exterior form of books, are, in reality, only rarities, objects of curiosity, which they read not, but sometimes complacently regard, sometimes ostentatiously display; and, as it is almost always those who possess the means of recompense that direct the labour of the workman, one need not be surprised at finding him more occupied in pointing out objects of rarity for the rich man's acquirement, or praising those he already possesses, than labouring to point out the merits of works of studious men, from whom no recompense can be expected.

Martin Mar-Prelate.

MARTIN MAR-PRELATE was a *nom de guerre* for a set of intemperate puritans in the reign of Queen Elizabeth, who circulated an immense number of libels; 'never,' says *d'Israeli*, in his *Calamities of Authors*, 'did sedition travel so fast, nor conceal itself so closely.' The press, at which these books were printed, was first set up near Kingston, in Surry, thence conveyed into Northamptonshire, thence to Norton, and afterwards to Coventry; thence into another part of Warwickshire, whence the letters were sent to another press at Manchester, where the snake was at length scotched by the Earl of Derby, hard at work on one of their most popular libels. For further particulars respecting Martin Mar-Prelate, Sir G. Paul's Life of Whitgift may be consulted with advantage.

Montague's (Edward Wortley) Junior, Reflections on the Rise and Fall of the antient Republics, adapted to the present State of Great Britain.—2d edit. 8vo. 1760; 3d edit. 1778.

THIS work was written by Foster, tutor to young Montague, who, after thrice running away, and being discovered by his father's valet crying *flounders* about the streets of Deptford, was sent to the West Indies, whither Foster accompanied him. On their return to England, a good-natured stratagem was practised to obtain a temporary supply of money from old Montague, and at the same time to give him a favourable opinion of his son's attention to a particular species of erudition, this work was published with the name of Edward Wortley Montague, Junior, subjoined. Old Wortley seeing the book advertised, sent for his son, and gave him a bank note of 100*l.* value, promising him a similar present for every new edition the book should pass through. It was well received by the public: a second edition therefore occasioned a second supply.

(*To be continued.*)

TO THE CONDUCTORS OF THE ENQUIRER.

GENTLEMEN,

If you think that the following curious circumstance is worthy insertion in your miscellany, you will oblige me by publishing it.

It is now some months since a quantity of old rope, from Norway, was deposited in an old building adjoining a dwelling house in High Street, Boston. The rope has been since taken away, and the old building pulled down; since this was done, the persons who occupy the adjoining dwelling house have been much annoyed with a small insect, which they suppose was bred amongst the old rope. They have used several methods to get rid of them, such as smoking their apartments with sulphur and charcoal, washing them with sublimate of mercury, lime-wash, &c. but all without effect. If any of your correspondents can suggest a method of destroying these insects, it will be of great service to the persons who are troubled with them. The insect is of the beetle tribe, and not so large as a bug—the elytra or upper wing is a most beautiful microscopic object. I have preserved it for the inspection of the curious.

S. VEALL.

Boston, 17 *Aug*. 1812.

ON SOPHISMS.

(Continued from p. 179.)

Of bad Reasoning in civil Conversation and common Discourse.

HITHERTO we have shown examples of false argumentations in matters of science. But, because the principal use of reason does not consist in acquiring sciences that are of little use for the conduct of life, wherein it is of dangerous consequence to be deceived, it will be of much more advantage to consider, generally, that which seduces men into these false judgments which are made of all sorts of things, and blind men with prejudice in matters chiefly importing manners, and conducing to the government of civil life, and are the subjects of our common discourse. But, as this design would require a treatise by itself, which would comprehend almost all morality, we shall here mark out only a part of the causes of those false judgments that are so common among men.

We shall not spend time in distinguishing false judgments from bad reasoning; as well because false judgments are the sources of bad reasonings, which they draw after them by a necessary consequence; as also because there is an implicit and latent ratiocination in that which to us appears a simple judgment, there being always something that serves as a motive and principle to that judgment. For example, when we say that a stick is crooked in the water, because it so appears to us; this judgment is grounded upon this general and false proposition, that what appears crooked to our senses, is crooked indeed; and so includes a reason which does not display itself. The causes of our errors, therefore, generally considered, may be referred to two heads; the one internal, which is the irregularity of our will, that troubles and disorders our judgment; the other external, which consists in the objects of which we judge, and which delude our understanding by a false appearance. These causes are seldom separated; nevertheless there are certain errors wherein the one discovers itself more plainly than the other; and therefore we shall treat of them apart.

Of the Sophisms of Self-love, Interest, and Passion.

1st. If we carefully examine why some men so obstinately dote upon one opinion rather than another, we shall find it to be not through any penetration into the truth, or the force of arguments, but some engagement of self-love, interest, or passion. This is the weight that draws down the balance, and determines the most part of our doubts; this is that which gives the greatest shock to our judgments, and stops the career of consultation. We judge of things, not as they are in themselves, but as they are in respect of us; and truth and profit are to us the same thing.

We need no other proof of this than that we see every day, that things, in other places generally held for doubtful or false, are accounted altogether certain by all those of one nation, profession, or order. For, it not being possible that what is true in Spain should be false in Turkey, nor the understandings of the Spaniards and Turks such, that while both judge of things by the rules of reason, what generally appears true to the one, should generally appear false to the other, it is evident that this diversity of judgment can proceed from no other cause than that the one are pleased to hold for truth what is for their advantage; which not being for the interest of the other, they have a contrary opinion of it.

Now what is there more unreasonable than to take our interest for a motive to believe a thing? All that ought to be done in such a case is but to consider the more attentively the reasons that may discover to us the truth of what we desire should be true. Nor is there any truth more plain than this, that that ought to be independent of our desires, which ought to guide our opinions. It would be absurd to say, I am of this country, therefore I must believe that such a saint first preached the gospel here. I am of such an order, therefore, I believe such an institution is wise and beneficial. These are no reasons. Of what order or country soever we may be, we are to believe only what is true, and which we would believe, to whatever country, profession, or order, we might belong.

2d. But this delusion is more apparent when it happens from change of passions. For though all other things remain in the same condition, yet to them that are provoked with new passions, it seems that the new change that has happened in their desires, has altered the whole course of things which are any way related to them. As we find there are some persons that will not acknowledge any good quality, either natural or acquired, in those against whom they have conceived an antipathy, or that in any thing thwarted their sentiments, their desires, or their interests. Presently such must be traduced for rash, haughty, ignorant, perfidious, faithless, and void of all conscience. Their desires are no less unjust and immoderate than their aversions. If they have an affection to another, he is free from all manner of faults. All that they desire is just and easy; whatever they do not desire, unjust and impossible; though there be no reason for these judgments, other than that which overrules them. So that although they do not form this rational argument in their minds; I love him, therefore he is the most accomplished person in the world; I hate him, therefore he is a worthless rascal; yet they do it in their hearts; and therefore we may call these extravagancies, sophisms and delusions of the heart, whose nature it is, to transport our passions to the objects of our desires, which we therefore judge to be such as we would have them; which is a thing most unreasonable, since our desires change nothing of the *Being* of what is without us, there being none but God alone whose will is so all powerful, that things are always what his pleasure is they should be.

3d. We may also refer to this delusion of self-love, that other delusion of those who determine all things by this most general and convenient principle; viz. that they have reason, and know the truth. Whence it is no difficult thing for them to determine, that they who think the contrary are deceived, for the conclusion necessarily follows.

The mistake of these persons proceeds only from hence, that the good opinion which they have of their own wit causes them to believe all their thoughts to be so clear and evident, that the bare propounding of them is sufficient to make all the world submit; and for this reason they take little care to bring proofs.

They give little ear to the reasons of others. They would carry the day by their own authority; because they make no distinction between their authority and reason. They take all persons for inconsiderate who are not of their opinion; not considering that if others be not of their judgments, they themselves are not of the opinions of others; and that it is not just to suppose without proof, that we have reason, when we make it our business to convince others, who differ from us, perhaps for no other reason, but because they believe we are not in the right.

4th. There are others who reject certain opinions on no other ground than this pleasant argument: If it were so, I should not be a learned person; now I am a learned person, therefore it is not so. For this reason certain past profitable cures in physic have been neglected, and many certain experiments have been laid aside. They who had not the good luck to think of them were afraid to be thought to have been so long in an error. "How!" say they, "if the blood had any circular motion in the body; if nature did not dread a vacuum; if the air were ponderous, and had a tendency to move downward, I had been ignorant of many important things in natural philosophy, and therefore these things must not be so." For the cure of such distempered fancies there needs but this wholesome instruction, that it is a small matter for a man to be deceived; and that they may be learned in other things, though perhaps not so well versed in certain particular branches of study.

5th. There is nothing more common than to hear men revile one another, and tax each other of obstinacy, passion, and litigious wrangling, because they cannot agree in their opinions; so that they that are right, and they that are wrong, talk the same language, make the same complaints, and ascribe to each other the same defects; than which there is hardly to be found a greater mischief among men. This obscures truth and error, justice and injustice, in such a manner that it is impossible for the common sort of men to discern them; and hence it happens that several men adhere at random, some to the one, and some to the other of the differing parties, and that others condemn both, as equally in the wrong.

Now all this captiousness of humour arises from this distemper, that every one is conceited of his own reason. For, from that principle it is easy to conclude that all who contradict us are opinionated; since obstinacy is nothing else but a stubborn refusal to submit to reason.

Though it be true, that these reproaches of being passionate, blind, and litigious, which are very unjust from those that are in the wrong, are just and lawful from those that are in the right; yet, because truth is supposed to be on the upbraider's side, prudent and judicious persons, that handle any matter in controversy, ought to avoid the use of them before they have sufficiently confirmed the truth and justice of the cause which they maintain, and not to accuse their adversaries of obstinacy, rashness, and want of common sense before they have well proved it. Let them not say, before they have made it appear, that their opponents talk absurdly and extravagantly; for the others will retort as much back again, and this is the way never to come to any issue. So that it will be much better to observe that equitable rule of St. Austin, "Let us omit those common things that may be spoken *on* either side, though they cannot be spoken truly *of* either side." And then it will be thought sufficient to defend the truth with those arms which are most proper, and which falsehood cannot borrow, which are *clear and solid reasons*.

6th. Men are not only fond of themselves, but naturally also jealous, envious, and maligners of each other, hardly enduring others to be preferred before them, and coveting all advantages to themselves; and as it is a thing that deserves great honour, to have found out any truth, or brought any new light into the world, all men have a secret desire to ravish that honour to themselves; which often engages men to encounter the opinions and inventions of others without any shadow of reason.

Therefore, as self-love causes us frequently to utter these ridiculous sorts of reasoning—This is a thing of my own invention; this proceeded from some of my own profession; this fits my humour, therefore it is true; so natural malignity suggests another way of arguing no less absurd—It was another and not I that said it, therefore it is false; it was not I that made this book, therefore it is idle and silly.

When men under the influence of this spirit of contradiction hear or read any thing of another man's, they take little heed of the reasons urged for their conviction, and mind only those which they think they can oppose. They are always upon the sentry against the truth, and think of nothing but how to repel and obscure it; in which they generally prove successful, the wit of man being an inexhaustible spring of false reasons.

The knowledge of this malignant and envious disposition, which resides in the bottom of men's hearts, teaches us one of the most important rules that are to be observed, for fear of engaging those with whom we dispute into headlong error, and alienating their minds from the love of that truth to which we endeavour to invite them; and that is, to say as little as may be to irritate their envy and jealousy, by boasting of a man's self, or by speaking of other things on which those affections may lay hold.

Monsieur Pascal, who knew as much of rhetoric as any person in his time, extended this rule so far, as to affirm that every wise man ought to abstain from so much as naming himself, or making use of the words I or me: and was wont to say on this subject, that Christian piety had abolished that human expression, I, which common civility had before only suppressed: not that this rule ought to be so exactly observed neither; for there are some occasions where it would be a vain torture to forbear the mention of a man's self.

But it is good to have this rule always before a man's eyes, that he may the more easily shun the evil custom of some persons, who never talk but of themselves, and are always quoting themselves, when there is no question concerning their sentiments; which raises in their hearers a supposition, that this frequent mention of themselves arises from an immoderate degree of self-complacency, and, by a natural consequence, produces a secret aversion to whatever they say.

And this is that which shows us that one of the most unworthy characters of a person of eminence is that which Montaigne affected; which is, to entertain his readers with nothing else but his own humours, his own inclinations, his own distempers, his virtues and his vices: all which arises as well from a defect of judgment as from a violent love of himself. True it is, that he endeavours to remove from himself the suspicion of a mean and popular vanity, speaking freely of his defects as well as of his good qualities; wherein there is something of comeliness through an appearance of sincerity: but it is easy to see that all this is but a kind of sport and artifice which ought to render him more odious. He speaks of his vices to display them to the world, not to cause a detestation of them, not esteeming them any diminution of his honours. He looks upon them as things almost indifferent, and rather as pieces of gallantry than of ignominy. If he discover them, it is because he thinks they little concern him, and that he believes himself never the worse, nor more despicable for what he has done. But where he apprehends any blot or stain of his credit, no man is more cunning nor diligent to conceal it. For which reason an eminent author of this age very pleasantly observes, "That seeing he was so careful to little purpose, to inform us that he had a page, a sort of servant little becoming a gentleman who had not above six thousand livres Tournois (about three hundred pounds) a year, he did not take the same care to tell us that he had a clerk too, seeing he was a counsellor in the parliament of Bourdeaux. But that employment, though very honourable in itself, was not sufficient to flatter the vanity of the man who would rather be thought a gentleman and a soldier, than one of the long robe and a pleader of processes."

But the vanity of this author is not his worst crime: he is so full of shameless effrontery; so abounding in Epicurean and impious maxims, that it is a wonder he has been so long suffered to be public in the world, and that so many persons of great understanding have taken so little notice of the venom that spreads itself in his writings.

We need no other proof of his libertinism than his manner of repeating his vices. For, confessing in his book that he had been guilty of several criminal disorders, he declares that he never repented of any, and that if he were to live his life over again, he would again act the same things! "As for myself," says he, "I would not desire in general to be other than I am.

I might condemn my universal form; I might desire of God an entire reformation, and to excuse my natural infirmities, but I ought not to call this repentance any more than a discontent that I am not an angel or a Cato. My actions are conformable to what I am, and my condition and repentance do not properly concern me as to those things that are not in my power. It was never in my thoughts, monster-like, to tie the tail of a philosopher to the head and body of a profligate, nor to make the end and remainder of a wretched and miserable life accurse and belie the fair, entire, and longer part of my days. Were I to live them over again, I would live them as I have done; nor do I complain of what is past, nor do I fear what is to come!" Horrible words! which denote an utter extinction of all religion; but well enough becoming him who thus delivers his sentiments in another part: "I plunge myself headlong stupidly into death, as into a silent and obscure abyss, which swallows me up all at an instant, and stifles me in a moment, full of powerful sleep, full of insipidness and indolence!" And in another place: "Death is no more than a quarter of an hour's sufferings, without future consequence or harm, and merits no particular precepts!"

Though this digression seems remote from the subject, yet it returns again where it quitted it, for this reason: that no book more infuses this evil custom of magnifying a man's self, of making use of himself and his own thoughts upon all occasions, and requiring others to do so too; which extremely corrupts reason and sense *in us,* through that vanity which always accompanies these discourses; and *in others,* through that antipathy which they have against it. Therefore no men are permitted to speak of themselves, but those who testify by their manner of doing it, that they publish their good actions only to excite others to praise God, and their faults only to humble themselves before men, and to dissuade them from the like courses. Generally, it is a ridiculous vanity to inform others of our petty parts, and it is an impudence deserving punishment to discover our disorders to the world without the least touch of remorse; since it is the highest excess of vice neither to blush, nor be ashamed, nor repent of evil actions, but to discourse carelessly and indifferently of our own impieties as of other matters; wherein properly consists the excellency of Montaigne's wit.

(*To be continued.*)

THE COLLECTOR. Nº I.

> " Floriferis ut apes in saltibus omnia libant
> Omnia nos." LUCRETIUS.

Account of large Diamonds.

Two very large diamonds belonged to the crown of France, known by the name of Sancy, and of Pitt's Diamond. The first was brought from Constantinople by M. de Harlay, Baron of Sancy, ambassador of France, weighed 55 carats, and cost *only* 600,000 livres. The latter, procured by the regent from an Englishman of the name of Pitt, weighed 156¼ carats, and cost 2,600,000 livres: it was worth double that sum! But the diamond which the Empress of Russia purchased, in 1772, from a Greek merchant, is the largest which is known in Europe; it weighs 779 carats, is of a very fine water, and was obtained for 250,000 franks only: it is true that the vender had an annuity of 100,000 francs secured to him, but the whole did not amount to one-fourth of its value; it is of the size of a pigeon's egg, and of an oval form, somewhat flattened at the ends. We are told that this diamond formed one of the eyes of the famous statue of Sheringam, in the temple of Brama; that a French grenadier who had deserted, and entered into the Malabar service, contrived to steal this eye from the pagoda, and made his escape to Madras, where he sold it for 50,000 francs to the captain of a vessel, who parted with it to a Jew for 100,000 crowns; by him it was afterwards transferred to the Greek merchant for an unknown sum.

Dictionnaire Universel de la Géographie Commerçante; par Peuchet. CU.

John Archer, M. D.

Was the author of "Every Man his own Physician," published in 1673. To this was subjoined, "A Treatise on Melancholy;" and "A Compendious Herbal." At the end of the book he mentions the three following inventions, as the issue of his own brain: a hot bath by steam for the cure of various disorders; an oven which doth, by a small fagot, bake, distil, boil a pot, or stew, with the same charge of fire, time, and labour. This oven was moveable. A chariot, with which one horse can as easily draw five or more people, as two horses can that number in the ordinary way: it is also so contrived that a man who sits in it may move it without a horse. May we not in these inventions perceive the hints of many contrivances now in great reputation?

Biographia Medica. CU.

Sailing Wheelbarrows.

"I THIS day saw a fleet of wheelbarrows, all of the same size. I have good reason to call them a fleet, for they were all under sail; having a little mast very neatly inserted in a hole or step cut in the fore-part of the barrow; to this mast is attached a sail made of matting, or more commonly of canvass, five or six feet high, and three or four wide, with reefs, yards, and braces, like those of the Chinese boats. The braces lead to the shafts of the barrow, and by means of them the conductor trims his sail.

"It was easy to see by this apparatus, that it was not a mere momentary matter, but an additional contrivance in the carriage, and meant to give relief to the barrow-men when the wind is fair; for otherwise, considering the money it must cost, and the trouble of carrying it, it would be a very ridiculous whim."

Van Braam's Dutch Embassy to China. CU.

Petrified Frogs.

NEAR the river Onion, about three miles from Burlington Bay, in digging a well, at the depth of twenty-four feet, wood was found, and about thirty frogs were discovered, but so apparently petrified that is was difficult to distinguish them from so many small stones; when brought out of the well, disengaged from the earth, and exposed to the air, they gradually felt the vivifying beams of the sun, and to the surprise of all present, leaped away with as much animation as if they had never lain in their subterraneous prison. The place where this well was sunk was on high ground, often surrounded by the river in flood-times; large pines, and the ancient fragments of them, are found on this land; from the appearance of the growth of this timber, those frogs we may well suppose to have remained under ground six hundred years.

Allen's History of the State of Vermont.

Mr. Allen accounts for this phænomenon by supposing that some convulsion of nature had taken place: but is seems a more natural conclusion, that the spot on which the frogs were found might communicate with the river by subterraneous passages. CU.

Address of an Arab to his Mare.

THE Chevalier D'Arvieux, in his *Voyage dans la Palestine,* has preserved the address of an Arab to his Mare, as delivered in his presence; and this, more eloquent than whole pages of descriptive information, presents us with a striking picture of Arab manners. "Ibrahim," says he, "went frequently to Rama, to enquire news of that mare which he dearly loved. I have many a time had the pleasure to see him weep with tenderness the while he was kissing and caressing her. He would embrace her; would wipe her eyes with his handkerchief; would rub her with his shirt sleeves; would give her a thousand benedictions, during whole hours that he would remain talking to her. '*My eyes!*' would he say to her; '*my soul! my heart! must I be so unfortunate as to have thee sold to so many masters, and not to keep thee myself? I am poor, my antelope! thou knowest it well, my darling! I brought thee up in my dwelling as my child; I did never beat nor chide thee; I caressed thee in the fondest manner. God preserve thee, my beloved! Thou art beautiful! thou art sweet! thou art lovely! God defend thee from envious* *eyes!*' It is necessary to add, that poor Ibrahim had been under the necessity of allowing a merchant of Rama to become partner with him in the possession of this animal. The mare was called *Touisa* (according to our mode of pronouncing Louisa); her pedigree could be traced, from public records, both on the side of the sire and dam, for *five hundred years* prior to her birth! and her price was *three hundred pounds;* an enormous sum in that country." CU.

Pope's Willow.

THE following is said to have been the origin of this famed relic of the Bard: it came from Spain inclosing a present to Lady Suffolk. Mr. Pope was in company when the covering was taken off, and observing the pieces of stick appeared as if there was some vegetation remaining, he said, "Perhaps this may produce something we have not in England." Under this idea, he planted it in his garden, and it produced the weeping willow that has given birth to so many others *.

J. B——N.

Correction of the Bible.

NOTWITHSTANDING what Knox has said against a new version of the Scriptures, it would certainly be very desirable in many cases. When, for instance, we read in the present Bible, "Christ *to have been without sin,*" and hear him afterwards termed a malefactor, St. Luke iii. 32. Dr. Kennicott examined this, and discovered how the error arose; it was merely from the want of two points, the Greeks reading *ετεροι δυο κακȣργοι*, &c. instead of *ετεροι δυο, κακȣργοι*, &c. Thus, instead of the present offensive version, which is, "there were also two other malefactors led with him to be put to death;" it will be, "two others, malefactors," &c. Indeed, the latter was the sense of the English version in 1583; "and there were two others, which were evil doers, led with him to be slain."

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* Mr. Collinson, in his notes relating to Botany, (see Linnæan Transactions, vol. x.) says, "Mr. Vernon, Turkey merchant at Aleppo, transplanted the weeping willow from the river Euphrates, brought it with him to England, and planted it at his seat at Twickenham Park, where I saw it growing, anno 1748. This is the original of all our weeping willows in our gardens." Martyn, in his edition of Miller's Dictionary, says, "This is the first authentic account we have of its introduction; the story of its being raised from a live twig of a fruit-basket, received from Spain by Pope, being only a newspaper authority so late as August 1801."

[illegible]

J. B——N.

Printing and Publishing.

About eight hundred new books are regularly published every year in the metropolis, amounting in value to about 240*l.* for one copy of each work. The gross annual returns, arising from the printing and selling of books, are not much short of a million sterling; and these trades furnish employment for upwards of two thousand persons.

J. B——N.

Man.

Philosophers have puzzled themselves how to define man, so as to distinguish him from other animals. Burke said, "Man is an animal that cooks its victuals." "Then," said Johnson, "the proverb is just; 'there is *reason* in roasting of eggs'." Dr. Adam Smith has hit this case: "Man is an animal which contracts or makes a bargain; no other animal does this. One dog does not exchange a bone with another."

J. B——N.

Oracles.

A man who had many dangerous enemies, consulted the *Oracle*, to know whether he should abandon his country. He received for answer: *Domine stes securus.* Shortly afterwards, his house was set on fire, and he barely escaped with life. Reflecting on the answer given by the Oracle, he discovered, but too late, that he ought to have understood it thus: *Domi ne stes securus.*

J. B——N.

Romeo and Juliet.

This appears to have been always a very favourite and popular tragedy. Old Marston, the satirist, so long since as the year 1598, has the following lines in one of his poems:

> "Luseus, what's play'd to-day? Faith, now I know;
> I set thy lips abroach, from whence doth flow
> Nought but sweet Juliet and Romeo!"

J. B—— —N.

Red Sea.

So called, not from any redness of either water or weeds, &c. but because anciently styled the sea of Edom, (as being partly on the coast of Edom.) The Greeks, knowing that Edom signified *red*, by mistake called it the *Erythrean*, or *Red Sea*.

Collyer's Sac. Int. D. C.

The following is copied from an old book, where it is said to have cost the author much foolish labour, for it is a perfect verse, and every word is the same, both backward and forward:

> Odo tenet mulum, madidam mappam tenet Anna.

Monthly Mag. D. C.

There is a custom at Braintree, in Essex, which seems to have originated in the introduction of *peg tankards*, by Edgar, in order to repress drunkenness. Vide *Enquirer*, vol. ii. p. 69.—A pint of beer is divided into three parts or draughts; the first is called Neckum, the second Sinkum, and the third Swankum, or Swank; which, in Bailey's Dictionary, is said to be "that remainder of liquor at the bottom of a tankard, pot, or cup, which is just sufficient for one draught; which it is not accounted good manners to divide with the left-hand man; and, according to the quantity, is called either a large or little Swank."

D. C.

When Sir Thomas More was Lord High Chancellor of England, his integrity and expedition were so great in the discharge of his duty, that after a few years, on calling for another cause, he was informed that all suits in that court depending, and ready for hearing, were finally determined;—this occasioned the following lines:

When *More* some years had Chancellor been,
No *More* suits did remain;
But that shall never *More* be seen,
Till *More* be there again.

Literary Panorama. D. C.

Hobson's Choice,

this or none; is derived from one Hobson, who let out horses at Cambridge, and obliged such as wanted one to take that next the stable door, being the one which had had most rest. Bourne, in his Poemata, has the following lines upon this circumstance:

HOBSONI LEX.

Complures (ita, Granta, refers) Hobsonus alebat
In stabulo longo, quos locitaret equos,
Hac lege, ut foribus staret qui proximus, ille
Susciperet primas, solus et ille, vices,
Aut hunc, aut nullum—sua pars sit cuique laboris;
Aut hunc, aut nullum—sit sua cuique quies
Conditio obtinuit, nulli violanda Togato;
Proximus hic foribus, proximus esto vice.
Optio tam prudens cur non huc usque retenta est?
Tam bona cur unquam lex abolenda fuit?
Hobsoni veterem normam revocare memento;
Tuque iterum, Hobsoni, Granta, videbis equos.*

D. COPSEY.

CHARACTER OF BECKET.

THE character of Becket, which has been assailed with much obloquy, and extolled with much panegyric, will be best ascertained by the unbiassed steadiness of a middle course of delineation. He was, without controversy, a man of strong abilities, great discernment, and some erudition. His manners and deportment were graceful and insinuating, though occasionally tinctured with an air of *hauteur*. His personal courage, and fortitude of mind, attracted the admiration even of his enemies; but the latter of these qualities degenerated into the most inflexible obstinacy as soon as he had attained the station of primate of the English church. While he held the office of chancellor, he shone as an able minister, and a loyal subject; as a judicious assertor of the rights of his sovereign, and the independence of the realm. But, when he assumed the metropolitan rank, he adopted very different sentiments, and proved a warm and persevering advocate for all the pretensions of the papal see, however repugnant to reason, decency, or justice. He entered into his new character with the zeal of an enthusiast, the intrepidity of a religious hero, the artful spirit and the evasive morality of an ambitious priest. That such conduct was the sole fruit of hypocrisy, can hardly be affirmed with truth. That superstition, of which even the strongest minds cherished some portion in those times, had perhaps so mingled itself with the conceptions of this celebrated prelate, that in supporting the cause of the church against the profanations of temporal interference, he might think he was promoting the purposes of pure religion. Every true patriot, however, must condemn his efforts for placing the clergy above the reach of criminal law; an exemption which would naturally encourage, in that order of men, the commission of the most atrocious offences; and for placing discord and animosity in the state, by the erection of the church into a distinct body, subject to a foreign governor, whose interests and prejudices had long clashed with the civil welfare of those states which arrogated a spiritual jurisdiction. In the progress of the contest which he maintained with his prince, he exhibited a violence of temper, a perverseness of opposition, and a propensity to revenge, which his panegyrists cannot excuse by all the reproaches that they have lavished on the conduct of his royal antagonist. Of his private demeanour we are authorised, by the concurrence of historians, to speak in commendation: he was chaste, temperate, and beneficent. But these virtues were obscured and lost in the mischievous tendency of his public proceedings.

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* Perhaps the above lines may be thought to be a desirable Prize Subject for the Juvenile Department; to be translated into English verse.

T.

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ANECDOTES.

Mr. Pennant is a most ingenious and pleasing writer. His Tours display a great variety of knowledge, expressed in an engaging way. In private life I am told he has some peculiarities, and even eccentricities: among the latter may be classed his singular antipathy to a wig; which, however, he can suppress till reason yields a little to wine; but when this is the case, off goes the wig next to him, and into the fire!

Dining once at Chester with an officer who wore a wig, Mr. Pennant became half seas over; and another friend that was in company carefully placed himself between Pennant and wig, to prevent mischief. After much patience, and many a wistful look, Pennant started up, seized the wig, and threw it into the fire! It was in flames in a moment, and so was the officer, who ran to his sword. Down stairs runs Pennant, and the officer after him, through all the streets of Chester: but Pennant escaped, from a superior knowledge of topography. A wag called this "*Pennant's Tour in Chester!*"

H. WALPOLE.

Virtuosi have been long remarked to have little conscience in their favourite pursuits. A man will steal a rarity who would cut off his hand rather than take the money it is worth: yet, in fact, the crime is the same.

Mr. ——— is a truly worthy clergyman, who collects coins and books. A friend of mine mentioning to him that he had several of the Strawberry-hill editions, this clergyman said, "Aye! but I can show you what it is not in Mr. Walpole's power to give you." He then produced a list of the pictures in the Devonshire, and other two collections in London, printed at my press. I was much surprised. It was, I think, about the year 1764, that, on reading the six volumes of "London and its Environs," I ordered my printer to throw off one copy for my own use. This printer was the very man who, after he had left my service, produced the noted copy of Wilkes's "Essay on Woman." He had stolen one copy of this list; and I must blame the reverend amateur for purchasing it of him, as it was like receiving stolen goods.

H. WALPOLE.

Should the above anecdotes be judged worthy a place in the Enquirer, they shall be succeeded by others.

HEREWARDUS.

DESCRIPTION OF A REMARKABLE

ALTERNATING BOILING SPRING.

TO THE EDITORS OF THE ENQUIRER.

GENTLEMEN,

PERHAPS the following description of a remarkable *Alternating Geyser*, or boiling spring, extracted from Sir G. S. Mackenzie's "Travels in Iceland," lately published, may afford some amusement to your readers. If any of them can satisfactorily account for the phænomenon, they will greatly oblige,

Your humble Servant,

J. B.——N.

"ABOUT a mile further down, at the foot of the valley, is the Tunga hver, an assemblage of springs, the most extraordinary, perhaps, in the whole world. A rock rises from the bog about twenty feet, and is about fifty yards in length, the breadth not being considerable. This seems formerly to have been a hillock, one side of which remains covered with grass, while the other has been worn away, or perhaps destroyed at the time when the hot water burst forth. Along the face of the rock are arranged no fewer than sixteen springs, all of them boiling furiously, and some of them throwing the water to a considerable height. One of them, however, deserves particular notice. On approaching this place, we observed a high jet of water near one extremity of the rock. Suddenly this jet disappeared, and another, thicker but not so high, rose within a very short distance of it. At first we supposed that a piece of the rock had given way, and that the water had at that moment found a more convenient passage. Having left our horses, we went directly to the place where this had apparently happened; but we had scarcely reached the spot, when this new jet disappeared, and the one we had seen before was renewed. We observed that there were two irregular holes in the rock, within a yard of each other; and while from one a jet proceeded to the height of twelve or fourteen feet, the other was full of boiling water. We had scarcely made this observation, when the first jet began to subside, and the water in the other hole to rise; and as soon as the first had entirely sunk down, the other attained its greatest height, which was about five feet. In this extraordinary manner these two jets played alternately: the smallest and highest jet continued about four minutes and a half, and the other about three minutes. We remained admiring this very remarkable phænomenon for a considerable time, during which we saw many alternations of the jets, which happened regularly at the intervals already mentioned.

"I have taken the liberty to give a name to this spring, and to call it the Alternating Geyser.

"To form a theory of this regular alternation is no easy matter; and it seems to require a kind of mechanism very different from the simple apparatus usually employed by nature in ordinary intermitters, or spouting springs. The prime mover in this case is evidently steam, an agent sufficiently powerful for the phænomena. The two orifices are manifestly connected; for, as the one jet sinks towards the surface, the other rises, and this in a regular and uniform manner. I observed once, that when one of the jets was sinking, and the other beginning to rise, the first rose again before it had quite sunk down, and when this happened, the other ceased to make any efforts to rise, and returned to its former state, till the first again sunk, when the second rose and played as usual. This communication must be formed in such a manner that it is never complete, but alternately interrupted, first on one side and then on the other. To effect this without the intervention of valves, seems to be impossible, and yet it is difficult to conceive the natural formation of a set of permanent valves; so that this fountain becomes one of the greatest curiosities ever presented by nature, even though in attempting to explain the appearances it exhibits, we take every advantage that machinery can give us. If it is occasioned by natural valves, these must be of very durable materials, in order to withstand continual agitation and consequent attrition.

"Not having obtained any explanation which I can consider quite satisfactory, and having been unable entirely to overcome the difficulty myself, I leave its solution to the ingenuity of those who may think the phænomenon of the Alternating Geyser worthy the exercise of their talents."

A LETTER

FROM A

MERCHANT OF TOMBUCTOO,

A CAPITAL CITY IN THE CENTRE OF AFRICA, TO HIS FRIEND THERE.

(Translated from the original Tombuctan by a Moorish Dragoman.)

London, the 22nd of the moon of the Lion, year 50,751.

Teee, the merchant of Tombuctoo, metropolis of the world, to his friend Cooo, the scribe; a sound mind in a sound body. Joy, my friend! while these savages are endeavouring to discover our city, I am in the midst of theirs. Their whole manners are so remote from those of the civilized world, that I am overwhelmed with strange particularities, and hardly know where to begin. I shall therefore content myself at present with a few observations; reserving further information for future opportunities.

I shall in the first place, as in duty bound, consider the important project which our monarch (of whom thou art the skilful servant) has formed for the subjugation of these savages. To prevent any other African nation from asserting any claim of prior discovery of this remote island, I in the night proceeded boldly to the chief temple, in the centre of this city, and affixed the holy badge of our religion, as a token of the right of the glorious sovereign of Tombuctoo. I also buried a bottle containing all his titles, subjoined to which is a solemn claim of these newly discovered islands in the northern sea, as gems inherent in his crown; and of the inhabitants as sheep reserved for his own slaughter-house. There can, therefore, be no future doubt to whom these islands belong.

Our numerous fleets may easily proceed down the great river, and entering the ocean, assail these lands on the west. The savages have indeed many and large ships; but they are happily strangers to that submarine fire, so long preserved as a secret of our state, and by which a few of our boats may send all their fleet into the air, and render it only an illumination of our triumph. Their soldiers are numerous, but not clothed in metal; in consequence they are quite exposed to those showers of active and caustic poison used by our troops; by which, when ejected to a prodigious height by our vast machines, whole territories may be overwhelmed, and millions of men sent to their fathers; the touch being instant death, and the very air rendered poison. May the blessings of all our gods attend the glorious inventor of this artifical pestilence, the secret of which is only known to us, the chosen people of heaven, the chief of all civilized nations! Let us bend to the gods in humble adoration for this favour, and ever remember their infinite goodness and mercy: most just it is, and most necessary.

There is a king in this country, but it is chiefly ruled by a sort of senate; which instead of meeting in the morning, the usual and chosen hour of the soul's vigour, assembles in the night, even in the nights of winter. Hence follow colds and catarrhs, and political fevers, and many inflammatory symptoms. Their state councils, as may be expected, are far inferior to ours; and forgetting that wisdom is the lot of the few, they always decide by the majority, a singular instance of direct opposition to our constitution.

I heartily agree with all Africa in execration of cannibals. That these people are cannibals I am convinced. Wouldst thou think, my friend, that out of thousands of blacks, imported by them, I have scarcely seen half a dozen, spared, I suppose, as is usual among the worst savages, by some favour or fortuitous circumstance? The rest are all eaten!

The vengeance will be sweet; we shall export them by whole ship-loads, and sell them to the southern cannibals of Africa. Many of the people are very fat and fair, particularly of the casts of the Spankidoodels, and of the Ha Hums, and the Mummums. This speculation will be excellently profitable. I should expect from five to twenty dinars per man.

As to the colonies to be sent here, they may be easily and firmly established. A few myriads destroyed by the artificial earthquakes, which we know how to produce so easily; and two or three millions blasted by our artificial pestilences, the rest will be overawed; and will respect our further progress in civilization, and superior skill in the arts of death and destruction. We must, by all means, insist on the establishment of a despotic government, exactly similar to our own. Without this the people could have no liberty nor happiness, and of course would grow fretful and lean; the very thing to be avoided, as our profit depends much upon their fat and good condition.

The lean and deformed may, however, be occupied for our profit in manufactures, in which they show some little skill. Indeed I am told they have, in this branch, excelled most of the savages of the north, for these forty years. Before this most articles were imported, in exchange for their wool, a staple commodity, and always a favourite; insomuch that perhaps some of our Tombuctan society of antiquarians may thence derive the singular partiality of this voracious people for the woolly heads of the negroes. This I leave to the learned. I have told thee, friend Coco, that about forty years back these savages imported most articles of manufacture; and, I am told, but know not how to credit it, that such was formerly their rage for importation, that they have repeatedly imported their kings from the continent, as being men of a superior manufacture to any made in their country. This I suppose is one of the fables obtruded upon ignorant travellers.

I know not well what religion these wild people profess. But we must send some missionaries to convert them to our faith, to the holy profession of MAGOTISM, without which no man can be saved. Their bodies are undoubtedly ours, by every law human and divine; and we shall send them to the shambles by thousands, according to the statutes of TIHI, concerning peace and war. But Heaven forbid that we should not previously endeavour to save their souls, for we cannot sell that aërial part. If a few myriads be roasted by a slow fire, and remarkably well basted, I could almost answer for the conversion of the remainder. Adieu!.

SOLUTIONS AND REPLIES

TO QUERIES PROPOSED IN THE PRECEDING NUMBERS.

QUERY 55.

Answered by Mr. S. Lavel, Boston.

I PRESUME that the intention of boiling wort, previous to fermentation, is to facilitate the decomposition of the wort, which is afterwards to be completed in the gyle tun. The wort, previous to boiling, is one uniform turbid wash, and would remain so, were no boiling or fermentation to take place. The process of boiling causes the parts which before were intimately united, to separate, and the wort then assumes a transparent appearance, with little flaky concretions floating in it. When the wort is in a state of rest, these concretions will subside to the bottom, and they are then called the grounds. I believe it is possible, by fermentation alone, to produce a transparent liquor, but the time requisite to accomplish it generally changes the wort into vinegar. The brewer, however, has another object in view, namely, the extracting the bitter principle from the hops, which cannot be conveniently effected by any other method than that of boiling them in the wort; and the time sufficient to extract the flavour of the hop will suffice to separate the component particles of the malt, so as to produce, by fermentation, a vinous, transparent, and palatable beverage. The distillers, whose only object is to obtain ardent spirits, do *not* boil their wort.

Mr. Joshua Bamford, of Holthead Seminary, near Huddersfield, says, brewers boil their wort in order to make it ferment more easily, and to clear it from impurities; also to get the strength of the hops, although the hops should not be boiled too long, as they then would lose their aromatic flavour, and the wort have a nauseous bitter taste.

Mr. John Nowell, of Farnley Wood, near Huddersfield, says, If we add yeast, or any other ferment to wort, in a moderate state of concentration, we shall, after a little time, find a decomposition take place; at first caloric is given off, which gradually heats the liquid to a certain degree. When the wort throughout is advanced to a proper temperature, we perceive a further consequence of the decomposition, in carbonic acid being given off in abundance. If the wort be kept at its proper heat, the decomposition proceeds with facility; but if we reduce the temperature, by conducting away any of the caloric, the carbonic acid ceases to be given off in such abundance, and the process is only partial. Again, if the caloric be returned, the fermentation proceeds as before; consequently a proper quantity of caloric is necessary to excite, as well as to keep up, the fermentative process. This being the case, I think we may now readily account for the practice, which is the basis of the query. When brewers obtain their wort, it is necessary, in order to exhaust all the extractive matter, &c. from the malt, to add a superabundant quantity of water, otherwise a certain small quantity of extract would remain in the malt; for it is a well-known fact to those versed in chemical experiments, that water, as well as other liquids, is capable of holding more of some substances in solution, than it requires of those substances to be saturated in a direct way. Now if any brewer should attempt to excite fermentation in this state of their wort, disappointment would be a necessary consequence; because the large quantity of water contained would carry off the caloric to surrounding bodies, on account of its extent of surface. Brewers, therefore, boil their wort, previous to fermentation, in order to expel the superabundant water.

Answered by Mr. J. Smith, Alton Park.

In the operation of brewing, the wort is boiled for the following reasons:—First, to extract the essential oil of the hops.—Secondly, to coagulate the mucilage extracted from the malt in mashing, which if suffered to remain in solution in the beer, would prevent it from becoming fine: it is, therefore, boiled "*previous* to fermentation," this latter process effecting a separation of the mucilage from the beer in the forms of yeast and lees.—Thirdly, to expel, by vaporisation, a portion of the water used in mashing, by which means the strength of the liquor is increased.

Mr. J. Baines, Jun. of the Mathematical School, Reading, also sent an ingenious solution.

QUERY 56.

Answered by Mr. J. B——n, London.

Cuckoos appear in our country early in the spring, and make the shortest stay with us of any birds of passage, as they generally take their leave of this country during the first week in July.

> ——————" The Cuckoo sings her idle song,
> —————————— nor does she cease
> Her changeful note, until the broom, full blown,
> Gives warning that her time for flight is come;
> Thus ever journeying on from land to land,
> She, sole of all the numerous feathered tribes,
> Passes a stranger's life without a home.
>
> Graham's "*Birds of Scotland.*"

In migrating the major part of these birds are supposed to go into Africa, since they are observed to visit the Island of Malta twice a year, in their passage backward and forward, as is supposed to that part of the world. The cuckoo is well known at Aleppo; it is also common in Sweden, but does not appear there so early by a month as with us. It has been supposed by some, that these birds do not quit this island during the winter, but that they shelter in hollow trees, and lie torpid, unless animated by unusually warm weather. Mr. Pennant gives two instances of their being heard in February; one in 1771, in the end of that month, the other in 1769, on the 4th day; but after that they were heard no more, being probably chilled into a torpid state. These, however, are solitary instances, and of no weight against the idea of their migration, which is, I believe, a fact generally allowed and believed by naturalists.

Mr. J. Smith, and *Mr. J. C. Savage, of Surfleet,* express similar opinions.—Mr. Smith observes, "that *young* cuckoos are seen here much later than the beginning of July."

Mr. Bamford supposes that the cuckoo lies in a torpid state during the winter months, but does not mention any instance of their being found in that condition.

Miss Groves, of Spalding Seminary, (aged 16) sent some very ingenious remarks on this query; as did also *Master W. Harrison, of Burton Pidsea,* aged 14½.

QUERY 57.

Answered by Mr. J. Smith.

By the expressions in question, we are to understand the male descendants of Abel, and the female posterity of Cain. The former, from their adherence to the worship and service of the Almighty, are, in the language of scripture, emphatically termed "sons of God;" while the latter, from the licentiousness of their conduct, and their disregard of religion, are called "daughters of men."

Mr. Bamford is of the same opinion.

Answered by Mr. D. Copsey, London.

The sons of God in the passage are generally understood to signify the angels, though some suppose them to be the offspring of pious Seth *; who began to call upon the name of the Lord; or, as others say, to call themselves by the name of the Lord; and who, adhering to the worship of the true God, were named the *sons of God*, in contradistinction to those who, being idolaters, are said to be the *children of the wicked one*. The former explanation seems to be most probable, and is supported by various parts of scripture. In Job, chap. i. ver. 6, the sons of God are represented as presenting themselves before the Almighty; and in chap. xxxviii. ver. 7, the sons of God (i. e. the angels) who kept their first estate, are said to have shouted for joy when they beheld the world rise into existence. But in the verse referred to in the query, the fallen angels must be intended. Josephus, in relating this fact, observes, that "many angels of God intermarried with women, and that the fruit of these unions proved unjust, and despisers of all that was good, on account of the confidence they had in their own strength; for the tradition is, that these men did what resembled the acts of those whom the Grecians called Giants *."—Antiquities, lib. i. cap. 3.

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* Genesis iv. 26.

In this sense it is also mentioned by Mrs. Rowe in the History of Joseph, book i.—Moloch, addressing Mithra in the infernal council, says,

"The bold example of thy loose amours
Prevailed on numbers of the heavenly pow'rs;
Who vainly had the first probation stood
Proof to ambition obstinately good.
Long after I, with my associates fell,
Thy friends enlarg'd the monarchy of hell;
On softer motives you abhorr'd the skies,
Allur'd by women's captivating eyes;
The sons of God thus with the race of man
Were mingled; hence the giant stock began."

Answered by Mr. E. S. Eyres, Liverpool.

By the *sons of God* I suppose is meant such of mankind as followed the precepts of God, in the same manner as the disciples of Plato or Socrates are often called the sons of Plato or Socrates. And since man, from the time of the fall, has always been in some degree inclined to evil, so were the wicked ones typically called the *daughters of men*. In consequence of the sons of God, or the virtuous, degenerating by mixing with the daughters of men, or the vicious, their issue "became mighty men," by which I suppose is meant the ancient giants who, according to the heathen mythology, warred against Jove.—This explanation, confounding the heathen and scriptural systems of religion, may by some people be judged improper; but I must be allowed to think that there exists a very great, and, in many cases, an apparent connection between the two religions; and in this opinion, I believe, I am not quite singular.

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* This notion that the fallen angels were in some sense the fathers of the old giants, was the constant opinion of antiquity.

Master W. Harrison and *Mr. Thomas Walker, of Farnley,* also answered this query.

QUERY 58.

Answered by M. Harrison, Crosland, near Huddersfield.

Add barytic water till saturation, taking care to avoid excess. The insoluble sulphate of barytes will be precipitated, and may be separated by a filter. A solution of malic acid passes through the filter, which may be evaporated to expel the superabundant water added in the barytic water; and in this state, if excess of barytic water be avoided, we shall obtain a solution of the malic acid in a state of tolerable purity.

QUERY 59.

Answered by Mr. M. Harrison.

I do not know any other method of accounting for the curious fact mentioned in this query, except the following:

We know that prussic acid precipitates all the oxides of iron at present known, from the brown to the black oxide. And yet, though prussic acid precipitates all the known oxides of iron, still the state in which the oxide is retained in the triple prussiate, is almost unknown to us.

In my opinion the minimum oxide of iron has not yet been discovered, but exists in solution in the triple prussiate. Though all other oxides of iron are precipitated by the triple prussiate, yet we do not know that this is exactly the case with the minimum oxide, or that which contains the smallest quantity of oxygen. In fact, it may differ so much from the others, as to be soluble in the simple prussiate, instead of being precipitated by it. Now this supposition being made, we may, I think, account for the fact alluded to in the query. In preparing the triple prussiate, we will suppose that the iron added to fix the simple prussiate, becomes disoxygenised, that is, reduced into the state of the minimum oxide by some peculiar cause unknown; then, if this conjecture be correct, the oxide ought to be dissolved instead of being precipitated by the simple prussiate, which we find to be the case. I do not know how far I am justified in supposing that there is an unknown low oxide of iron, several facts appear to bear me out in the supposition, and it would be impossible to explain the fact which gives rise to this query, without bringing in the aid of this idea.

QUERY 60.

Answered by Mr. E. S. Eyres, (the proposer).

The method I have generally made use of, to obtain azotic gas, is by disengaging the marine acid in its aerial form over a receiver, containing the purest volatile alkali, which is thus decomposed, its hydrogen combining with the oxygen of the acid, while the azote is separated, and may be received in a state of great purity.

Answered by Mr. I. Nowell.

For obtaining azotic gass, I have for some time made use of the following process; and though it differs from the methods generally practised, it far exceeds them in point of accuracy, neatness, and expedition.

Provide a tolerably stout glass tube 12 or 14 inches long, and in diameter about $\frac{1}{4}$ of an inch. Seal one of its ends, either hermetically or by means of a cork, and divide the tube into any number of equidistant parts; for instance, into one hundred. This being done, fit into the unsealed end a common cork, and make it perfectly easy to be removed; or if a glass stopper or small brass cock were adapted, it would answer so much the better. In the next place, prepare a small quantity of nitrous gas, by introducing a few shreds of copper into a retort, and pouring upon them a little nitre acid; apply heat, and receive the gass over water. Take the glass tube mentioned above, fill it with water, and invert it on the shelf of the pneumatic trough. Throw up into it 50 measures of atmospheric air, then introduce 50 measures of the newly prepared nitrous gas, and instantly cork the tube under water; an absorbtion of the oxygenous portion of the atmospheric air introduced takes place, and a partial vacuum succeeds, which exists if we keep the cork or cock well closed. Now the tube should always contain more nitrous gas than is necessary to condense all the oxygen; to remove this nitrous gas from the remaining azote, introduce the corked part of the tube into a strong solution of sulphat of iron, and remove the cork, the sulphat of iron rushes in to supply the place of the vacuum, now cork the tube and employ agitation. The nitrous gas becomes absorbed by the sulphate, and the azote is left behind pure, occupying in bulk about 39,5 or 40 measures of the tube.

Query 61.

Answered by Mr. Bamford.

The opinion advanced by Rousseau does not appear to be corroborated by fact, for there are many men whose proficiency in the arts and sciences, and whose wide and liberal views and comprehension of knowledge, fully entitle them to the name of philosophers, who never make that proficiency and those comprehensions known to the world, and who pass through life with very different characters to what their deserts entitled them to, had not the innate modesty, and unassuming diffidence always attendant on real knowledge, unfitted them for the intercourse of the world. Such men in retirement and solitude, unknown to the world, court wisdom, for wisdom's sake; they seek after truth, because they regard it as the ultimatum of per-

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fection; and thus they falsify the opinion of Rousseau, by obtaining wisdom without the reputation of it.

Mr. Baines and *Mr. M. Phoston* expressed similar opinions.

Answered by Mr. D. Copsey.

'Solomon says, "through desire a man having separated himself seeketh and intermeddleth with all wisdom;" this desire, I think, may be fairly referred to the love of fame, which, if it be not a universal passion, is nevertheless a very powerful motive.

There are few writers or students who are impelled *solely* by the love of knowledge. An eager thirst for literary renown is the grand stimulus in the learned world. It is for this the philosopher consumes the midnight oil; for this he is contented to devote himself to the weariness of study: he looks forward to that enviable height on the hill of science, when he shall be appealed to on subjects of doubtful issue, and when his *ipse dixit* will be sufficient to quiet the most contentious, and satisfy the most sceptical.

While some have meanly sought to acquire this celebrity, by laying claim to performances not their own, others have candidly and openly avowed the secret spring of all their learned labours.

A desire of gaining the applause of our contemporaries, and of perpetuating the remembrance of our names and exploits, lives in every breast; it is shown even by the simple unlettered hind who carves his name on the bark of trees.

> ——————— behold the proud alcove,
> ——————— yet not all its pride secures
> The grand retreat from injuries impress'd
> By rural carvers, who with knives deface
> The pannels, leaving an obscure rude name,
> In characters uncouth, and spelt amiss.
> So strong the zeal t' immortalize himself
> Beats in the breast of man, that ev'n a few,
> Few transient years, won from th' abyss abhorr'd
> Of black oblivion, seem a glorious prize,
> And even to a clown.
>
> *Cowper's Task. Book I.*

This principle is so predominant in us, that almost all the common actions of our lives are performed with a view, not so much to our own individual convenience as to what others will say or think; so that what Pope says may be applied equally to the learned and unlearned, to the poor as well as the rich:

> "Abstract what *others feel*, what *others think*,
> *All* pleasures sicken, and *all* glories sink."

Query 62.

Answered by Mr. E. S. Eyres.

It is generally allowed that transparency consists in the regular position of the pores of a body, and in this case the irregular pores of the paper are in part filled with the oil, and so allow the light a more direct passage. The same effect would in some degree be produced by the saturation of the paper in any liquid, as water; and the same reason may be assigned to account for it.

Answered by Mr. John Nowell.

Light passing through bodies, (deviating more or less from its course by approaching the perpendicular) constitutes transparency.

When a ray of light passes obliquely into a denser medium, it is refracted towards the perpendicular, and of two refracting mediums of the same density, that which is of an unctuous or fat nature will have the greatest refracting powers. The ratio in which bodies refract light is in proportion to the quantity of hydrogen they contain. The fixed oils contain a pretty large quantity; the same may be said of water. The wonderful genius of Newton anticipated this discovery; after examining the refractive powers of water, and also of the diamond, he concluded that each contained incombustible matter. M. Biot has applied this grand idea of Newton's to a happy method of judging the composition of bodies, abounding in hydrogen, with the most perfect success.

Answered by Mr. John Smith.

The cause of opacity in bodies consists in the unequal density of the parts, in the magnitude of the pores, or in the pores being either empty or containing matter

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of a different density from that of the body, by which means the rays of light in their passage are arrested by innumerable refractions and reflections, become extinct, and are absorbed. It hence appears that all opaque bodies become transparent when their pores are filled with a substance of nearly equal density with their parts; and thus paper that has imbibed oil acquires transparency.

Mr. Joshua Bamford also answered this query.

QUERY 63.

Answered by Mr. J. B——n, London.

This question has often been discussed, and upon the subject there are three opinions. 1st. That they migrate to a warmer climate. 2nd. That they retire to hollow trees and caverns, where they lie in a torpid state. 3rd. That they lie in the same state at the bottom of lakes, and under the ice.

Those who assert that these birds migrate to a warmer country in winter, argue, That as it is a fact fully proved by the observations of natural historians, that many kinds of birds regularly migrate, is it not therefore more probable that swallows and martins, which disappear regularly every season, retire to some other country, than that they lie in a state of torpor in caverns and lakes? But this opinion is founded on facts; we often see them collected in great flocks, on churches, rocks, and trees, about the time when they annually disappear, and the direction of their flight has invariably been observed to be to the southward.

> " Aloft they fly, and melt in distant air.
> Far o'er the British sea, in westering course,
> O'er the Biscayan mountain waves they glide:
> Then o'er Iberian plains, through fields of air,
> Perfum'd by orchard groves, where lowly bends
> The orange bough beneath its juicy load,
> And over Calpe's iron-fenc'd rock their course,
> To Mauritania's sunny plains they urge.
> There are, who doubt this migratory voyage,
> But wherefore from the distance of the flight,
> Should wonder verge on disbelief; the bulk
> So small, so large and strong the buoyant wing?"
>
> Grahame's " *Birds of Scotland*."

They have also been found on their passage at a great distance from land. Mr. Adamson informs us, that about fifty leagues from the coast of Senegal four swallows settled upon the ship, that these birds were taken, and that he knew them to be European swallows, which he conjectures were returning to the coast of Africa; he also asserts, that during his long residence at Senegal, he constantly observed the swallows arrive there, about the same time that they leave Europe. Sir Charles Wager also mentions a great flock of swallows which settled on his rigging as he entered the channel. Since therefore swallows have been seen assembled in great flocks in autumn flying off in company towards southern climes, since they have been found both on their passage from Europe and returning again, can there be any doubt of their annual migration? The second notion has great antiquity on its side. Aristotle[*] and Pliny[†] say, that swallows do not remove very far from their summer habitation, but winter in the hollows of rocks. Between the town of Caen and the sea, along the river Orme, there are many caverns, where clusters of swallows are found hanging in the form of grapes. The same observation has long since been made in Italy. Albinovanus, in the elegant elegy which he wrote on the death of Mæcenas, describes the swallows retiring to the rocks as a sign of the approach of winter.

> "Conglaciantur aquæ, scopulis se condit hirundo:
> Verberat egelidos garrula, vere lacus."
>
> "Frost binds the streams, in rocks the swallows lie;
> In spring to cooling streams they twittering fly."

Of late several proofs have been brought of some species having been discovered in a torpid state. 1st. In the chalky cliffs of Sussex, as was seen in the fall of a great fragment some years ago. 2nd. In a decayed hollow tree, that was cut down near Dolgelli in Merionethshire. 3rd. In a cliff near Whitby in Yorkshire, where, in digging out a fox, whole bushels of martins were found in a torpid condition. 4th. The Rev. Mr. Conway, of Sychton, Flintshire, a few years ago in looking down an old lead mine in that county, observed numbers of swallows clinging to the timbers of the shaft, seemingly asleep, and on throwing some gravel on them, they moved, but never attempted to fly; this was between All Saints and Christmas. The third opinion has had a thousand testimonies brought in support of it, but they all seem to carry their own refutation along with them, it has, however, the authority of Linnæus in its favour, as appears from the following passage:—"Hirundo *(Rustica)* habitat in Europæ domibus intra tectum, cum urbica *demergitur*, vereque emergit." It is clear from the expression of *demergitur* (though perhaps not classical) that this naturalist conceived these birds hid themselves under water, during the winter. Dr. Wallesius, the celebrated Swedish chemist, likewise informs us, that he has more than once seen swallows assembling on a reed in a lake, till they were all immersed, and went to the bottom, previous to which they sung a dirge of a quarter of an hour's length. He had also seen a swallow caught during the winter out of a lake, with a net, drawn (as is common in northern countries) under the ice; this bird was brought into a warm room, revived, fluttered about, and soon after died. The fact, however, of swallows having been found in lakes and ponds is extremely doubtful, for though there are abundance of lakes in Britain, yet there is no well attested fact of swallows having been found therein in a state of torpor and immersion. Till such are found, we are surely excusable in suspending our belief. Upon the whole, we may conclude, that the swallows and martins in Spain, Italy, France, and perhaps some from England, remove to warmer climates; and that some English ones, and some in Germany, and other cold climates, retire into clefts and holes in the rocks, and remain there in a torpid state.

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[*] Arist. Hist. Animal. Lib. viii. cap. 12.

[†] Plinii Hist. Nat. Lib. x. cap. 24

Mr. John Baines after enumerating various instances of swallows having been observed in their annual migrations, and likewise of their being found in a state of torpidity in hollow trees, caverns, &c. adds, "The experiments of the Count de Buffon, and Mr. John Hunter, render the third opinion very improbable"—he supposes, that the swallows found in a torpid state in caverns, &c. are only the latter hatches, or those young birds which are incapable of distant migrations; and that the main bulk pass the winter in some part of the continent of Africa, which opinion, he says, is supported by Adamson, Buffon, Catesby, Marsigli, Ray, Reamer, Willoughby, and other eminent naturalists.

Mr. Bamford's opinion exactly coincides with Mr. Baines'.

Miss Groves says, "There are four species of the swallow tribe which visit England, and that it is highly probable, three of these species annually migrate to a warmer climate; but that the fourth, viz. the sand-martin, from its habit of building its nest in the sandy banks of rivers, and in cliffs and quarries, may probably pass the winter in a torpid state."

Answered by Mr. A. Nesbit of Farnley.

"How swallows dispose of themselves during the winter is a question which has long puzzled the scientific, and amused the speculative world; nor does it appear that the point is yet clearly settled." Mr. Nesbit here enumerates the three different opinions which have been formed, (see Mr. J. B—n's communication) and adds, "But I am persuaded, that if we give the following assertions and conjectures their due weight, it will appear pretty evident that these birds dispose of themselves different ways."

Olaus Magnus, in his Breviar. Hist. Septent. Lib. xix. Chap. 11. says, "That swallows take up their winter quarters, in lumps and clusters under the ice, in the northern seas," and Etmuller affirms, "That he has found swallows in clusters, among the reeds and rushes of lakes and fish-ponds.

Dr. Derham says, "That at a meeting of the Royal Society, Feb. 12, 1711-12, Dr. Colas declared, That he saw sixteen swallows drawn out of the lake of Samdrot, and about thirty out of the king's great pond in Rosinielin, and that at Schlebitten, he saw two swallows come out of the water, with their wings hanging on the ground, and very weak, not being able to fly."—

See Derham's Physico Theology. Book vii. chap. 3. note 4.

Mr. A. Aikin in his "Natural History for the Year," says, "That probably some of the latter broods of swallows remain with us during the winter, for the most part in a state of torpidity; but that the main body migrates across the channel to France, thence to Spain, and passes at Gibraltar, to the northern shores of Africa, returning by the same road, in the spring, to Great Britain."

It does not appear, however, that this is always their route, for it is well known that they have been frequently seen in very numerous flocks, by mariners, at a great distance from land; and have occasionally converted into a resting place, the rigging and yards of vessels.

Answered by Mr. John Smith.

Different opinions have been entertained by naturalists respecting the winter retreat of the birds in question. Some have thought that the chimney swallow *(hirundo rustica)* never quits this country; and others have inclined to the same notion with respect to the whole tribe of hirundines. It has been affirmed of these birds, (but more particularly of swallows) that, at the time of their disappearance, they congregate and immerge into rivers, ponds, &c. in the mud, at the bottom of which, they lie torpid during winter, and thence emerge on the approach of summer. This opinion respecting the submersion, and after-resuscitation of swallows, has, however, been controverted. From the similarity of their respiratory organs to those of other birds, it has been concluded, that they could not remain under water for any length of time without drowning; and since they moult, (if they moult at all) after their disappearance, it has been thought to require too great a stretch of credulity to believe that they acquire new feathers in those subaqueous abodes. Perhaps the most probable opinion is, that both swallows and martins are migratory; and as voyagers have observed large flights of them making their way towards Africa,

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it is conjectured that their general winter retreat is in that country.

Mr. I. E. Savage, and *Mr. W. Harrison,* also sent communications on this Query.

QUERY 64.

Answered by Mr. D. Copsey.

The Jews were accustomed to express themselves by *actions* as well as by *words:* in times of trouble they rent their garments, went barefoot, and put dust on their heads. This method of conveying their meaning by allegorical expressions was common among the eastern nations as well as the Jews.

Salt was esteemed an emblem of perpetuity on account of its qualities; so that sowing the ruins of a city with salt might denote the *continuance* of its desolation. In Numbers, ch. xviii. v. 19, the sacrifice of the children of Israel is said to be " a covenant of salt *for ever,* before the Lord ;" and in 2 Chron. ch. xiii. v. 5, Abijah, king of Judah, addressing Jeroboam and the tribes which had revolted, observes, " That God had given the kingdom of Israel to David *for ever* by a covenant of salt.

The custom of sowing an overthrown city with salt, might also be intended to imply a lasting monument of vengeance; as in Gen. ch. xix. v. 26. " Lot's wife, being turned into a pillar of salt, became a memorable example to all who should hereafter be disobedient to the word of God.

Answered by Mr. E. S. Eyres.

It is well known that salt has a property of destroying the fertility of land, therefore Abimilech, to shew his utter detestation of Shechim, not only " beat down the city," but " sowed it with salt," in order to render its site an entirely useless piece of ground, being neither an inhabited place, nor fit for the purposes of agriculture.

Mr. J. Bamford is of the same opinion.

QUERY 65.

Answered by Mr. A. Nesbit of Farnley.

The commencement of the medical profession, whether we regard it as an art or a science, or both, is lost in the darkness of the earliest ages.

The most ancient physicians of whom we read, are those who embalmed the body of Jacob, by order of his son Joseph. The sacred writer styles these physicians servants of Joseph; whence we may be assured, that they were not Egyptian priests, who are generally considered to have been the first physicians. Jacob died about 1689, B. C.

We read that when Asa, king of Judah, who began his reign about 955, B. C. was diseased in his feet, "he sought not to the Lord, but to the physicians:" hence we may conclude, that the medical art was, at that time, practised among the Jews, by regular professors.

The celebrated poet Homer, who is said to have died about 907 years before Christ, mentions many persons among the Greeks, that were acquainted with the science of medicine. To enumerate them all would be a needless task; suffice it to say, that Chiron, Æsculapius, Apollo, Prometheus, Hercules, Theseus, Telamon, Peleus, Achilles, Machaon, Podalirius, and Palamedes, were among the number; the last of whom is said to have prevented the plague from infecting the Grecian camp, after it had ravaged most of the cities of the Hellespont.

Among the Greeks, however, Æsculapius was reckoned the most eminent practitioner of his time; and his name continued to be revered after his death. He was ranked amongst the gods; and the principal knowledge of the medical art remained with his family, until the time of Hippocrates, who reckoned himself the seventeenth in a lineal descent from Æsculapius, and who was truly the first that treated of medicine in a regular and rational manner.

Hippocrates was born in the island of Cos, 460 years before Christ, and is the most ancient author whose writings have descended to the present day: hence, he is justly styled the father of physic and the prince of physicians. He not only treats of anatomy, surgery, and physic, but also of the effects of sleep, watchings, exercise, rest, diet, and air; and of all the benefit or mischief we may receive from them. He practised physic in Greece, and became so eminent, that he was sent for to the court of Perdiccas king of Macedon, who was thought to be ill of a consumption; but, it is said, Hippocrates soon discovered that he was in love with Phila, his father's mistress.

Artaxerxes, king of Persia, also offered him one hundred talents, and several entire cities, if he would endeavour to remove a pestilence which raged in his territories; but Hippocrates rejected the proposal, and returned the messenger this generous answer: "Tell your master that I am rich enough, and that I cannot, with honour, accept his offers, nor go to cure barbarians, who are enemies to the Greeks." He was likewise applied to by the Senate of Abdera, to cure their countryman Democritus, whom they considered as mad; but Hippocrates declared, that the *philosopher* was the only man in the city who was perfectly in his senses.

The people of Athens conferred on him great favours, and voted a public maintenance for him and his family; and some writers affirm, that they erected a statue of gold to his honour, and decreed him a crown of the same metal. His memory is still venerated in his native island, and the inhabitants shew with pride, a house in which they say he resided. He died 361 years before Christ, at the advanced age of 99, leaving behind him an immortal reputation.

Answered by Mr. J. Smith.

Though we may suppose the science of medicine to be of remote antiquity, we have no satisfactory account of it previous to the time of Hippocrates. From this philosopher, who flourished about 400 years before the christian æra, medicine first acquired the form of a distinct science; but the exact time when it was first practised by regular physicians, has not been accurately ascertained.

Mr. Baines and *Mr. Bamford* also answered this query.

QUERY 66.

Answered by Mr. J. B——n, London.

The term Whig was originally a name given to the friends of civil and religious liberty, who, after long struggling against the Tories, and other supporters of the arbitrary power of the house of Stuart, at last prevailed, and established our present happy constitution in church and state, by the revolution of 1688, and the settlement of the succession in the house of Hanover. The origin of the term is stated by Burnet to have been as follows:—"The southwest parts of Scotland have seldom corn enough to serve them round the year, and the northern parts producing more than they need; those in the west come in the summer to buy at Leith the stores that come from the north; and from a word *whiggum* used in driving their horses, all that drove were called *whiggamors*, and shorter, *the whigs.* Now in the year before the news came down of Duke Hamilton's defeat, the ministers animated their people to rise and march to Edinburgh; and they came marching at the head of their parishes with an unheard-of fury, praying and preaching all the way they came. The Marquis of Argyle came and headed them, they being about six thousand. This was called the whiggamors inroad; and ever after, all that opposed the court, came in contempt to be called *whigs;* and from Scotland the word was brought into England, where it is now one of our unhappy terms of disunion." The appellation of tories was first given to a set of banditti in Ireland, whose summons to surrender was expressed by the Irish word *toree*, i. e. "give me." It was thence transferred to the adherents of Charles I. by his enemies, under the pretence that he favoured the rebels in Ireland. This is the most popular account, and yet it is certain that the terms whig and tory were but little known till about the middle of the reign of Charles II. M. De Cize relates, that it was in the year 1678 that the whole nation was first observed to be divided into whigs and tories; and that on account of the famous deposition of Titus Oates, who accused the Catholics of having conspired against the king and state—the appellation of Whig was given to such as believed the plot, and tory to those who held it fictitious.

Mr. Bamford, Mr. Copsey, and *Mr. J. Smith* sent communications respecting this query, agreeing in substance with the above.

QUERIES PROPOSED FOR DISCUSSION

IN THE NINTH AND SUCCEEDING NUMBERS.

1 Qu. (67) *By Mr. E. S. Eyres, Liverpool.*

Having lately had some controversy with the Rev. Thomas Cormouls, A. M. who entirely denies the Newtonian theory of the universe, dividing his "refutation" into many parts; in the first of which, he not only denies the truth of Newton's law of the squares of the distances, but substitutes one of his own, in which he says "bodies of the heaviest materials fall only with an increase of eight feet per second;" he says an half pound iron ball falls very nearly forty-two feet in two seconds, instead of about sixty-four. Now as this is a subject of great importance, I should be much obliged to any of the correspondents of the Enquirer who could inform me of an accurate method of measuring the fall of bodies in given times, or the times of falling through given spaces.

2 Qu. (68) *By Mr. M. Harrison, Crosland, near Huddersfield.*

What intention had the ancients in teaching the doctrine of the transmigration of souls?

3 Qu. (69) *By the same.*

How are the dormouse, and other animals, supported during their torpid state?

4 Qu. (70) *By the same.*

Does the panifying fermentation of bread paste, differ in its principle from the acetous?

5 Qu. (71) *By the same.*

In whatever situation a seed may be placed in the earth, after germination the radical descends directly downward, and the plumula on the contrary invariably ascends, required the cause?

6 Qu. (72) *By the same.*

From whence originates the caloric produced by friction; from the body rubbed, or from some other source?

7 Qu. (73) *By the same.*

Draw the line of distinction between the electric and galvanic fluids.

8 Qu. (74) *By Mr. A. Hirst, Marsden.*

If a thermometer be put under a receiver, and it be exhausted of air; will the focus of a burning lens thrown upon the thermometer have any effect in raising it? If not—required the reason.

9 Qu. (75) *By the same.*

The heat of the sun's rays may be felt through a window, (or even ice), but this is not the case with the heat of a culinary fire, or any artificial heat—Query the cause?

10 Qu. (76) *By the same.*

It is an old maxim, that if the sky be red in the west after sunset, it betokens that the succeeding day will be fine—Query, what is the cause of this redness, and what degree of credit ought to be given to this assertion?

11 Qu. (77) *By Mr. M. Borough,* of Rebroyd-bridge, near Halifax.*

What is the cause of the sweet taste of a frosted potatoe?

12 Qu. (78) *By Mr. S. Lavel, Boston.*

Why do distillers use raw grain with their malt?

13 Qu. (79) *By Mr. Malt.*

It is a common opinion, that malt brewed in large quantities is more productive than when brewed in smaller portions; as for instance, that eight bushels will make a hogshead of stronger ale, than four bushels will make half a hogshead, or two bushel a quarter cask, &c.—Is this opinion correct?

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* This query was also proposed by Mr. John Nowell, of Farnley.

14 Qu. (80) *By Mr. A. Nesbit, Farnley.*

How are we to account for the peopling of America, which was unknown to the rest of the world, until the year 1492, when it was found inhabited, not only by human beings, as also with birds and beasts, differing in general from those of the old world?

15 Qu. (81) *By Mr. J. Nowell.*

Hay stacked green and soft, will heat and become brown; some grooms say that hay in this state is better for horses, as it causes them to drink more—is this assertion true or false; if true, what is the reason?

16 Qu. (82) *By the same.*

It is said that a barberry bush growing in a field of corn, causes mildew around to a certain extent—is this true, if so, required the reason?

17 Qu. (83) *By Mr. M. Phoston.*

From what is the word Epiphany derived, and what is understood to be celebrated by this annual feast?

18 Qu. (84) *By the same.*

Can the annual custom of eating twelfth-cake, be traced to any satisfactory source?

POETRY,

ORIGINAL AND SELECT.

ODE TO FORGETFULNESS.

BY MARIANNE MEGGETT.

Where dost thou dwell,
Goddess of the opiate spell?
I've sought thee in the rural shade,
The upland lawn, the silent glade:
For thee I've sigh'd in gloom of night,
Sought thee at morn's first dawning light;
I've chas'd thee o'er the troubled deep;
I've woo'd thee in the arms of sleep;
Pursu'd thee in gay pleasure's round;
I've chas'd thee through the mazy dance,
And follow'd thee through heaven's expanse;
Have call'd thee from the shades below,
And sought thee midst the Alpine snows:
The painter's art, the poet's fire,
Th' historic page, Apollo's lyre,
Have all been ransack'd, but in vain,
To ease my heart's corroding pain,
To bring the leaden-scepter'd queen,
Of frozen look and absent mien.
Forgetfulness! coy nymph with poppies crown'd,
Whose vacant eye unheeding gazes round,
O take me in thy arms!
Lull me with thy potent charms;
Pour oblivion in my heart,
And tear the sting from memory's dart,
Till every pulse that us'd to thrill
Be like a midnight slumber still.
Oh let me in some druid's wood be laid,
Where never human feet invade
Its consecrated shade!
Save when the priest,
From cares releas'd,
Walks musing forth at evening hour,
And careless plucks his favourite flower.

The primrose! emblem of that frigid state,
That apathy of heart, which now, too late,
I almost wish had been my kinder fate.
Yet still me who,
A prey to woe
That springs from love,
Would wish to prove
The calm from apathy that springs?
O rather let the stings
Of disappointed love for ever rage;
Still let my love and reason wage
Unequal war. Yet O! in pity strew
O'er my scorch'd heart the cooling dew
Shook from the nightshade's baneful flower,
Gather'd in Pluto's gloomy bower:
Let poisonous plants my head enshroud,
Let juice of hemloc be my food.
Oh nymph with poppies crown'd,
Shed thy dull power around;
Let thy dark mantle ravish from my view
Inconstant youth! your perjuries and you.

THE WILD-ROSE.

BY MARIANNE MEGGETT.

How oft doth merit pine alone,
Neglected live, unpitied die!
How oft doth beauty bloom unknown,
And unadmir'd that beauty fly!

How oft are gaudy fools caress'd,
Who, spoilt by flatt'ry's smooth disguise,
In studied grandeur vainly dress'd,
Without one charm attract all eyes?

Within the windings of a wood
A beauteous wild-rose lonely grew,
Near to a shady bower it stood,
And unmolested there it blew.

One eve the little Helen stroll'd
Alone to taste the cooling air;
She sought the wood, and, uncontroll'd,
The little vagrant wander'd far;

She saw this rose which grac'd the bower,
She reach'd her hand to pull it straight,
And Flora trembled for the flower
She lov'd, and wept its wretched fate.

But Helen turn'd disdainful by,
And cried, " You pale, insipid rose!
I'll leave you here with weeds to vie,
For you can only vie with those.

" I love the rich parterre's gay sight,
Where purple, blue, and scarlet shine;
The tulip is my heart's delight,
In her those colours all combine."

The little Helen's infant choice
Displays the world's fantastic taste,
High station gains its partial voice,
And grandeur's sure to be caress'd.

An unassuming, open heart,
Simplicity of dress and mind
Insipid seem, while turgid art
And gilded fortune friends will find.

MY HUSBAND.

Who view'd my face with fond delight,
And thought my eyes, with lustre bright,
Eclips'd the stars that shine by night?
My husband!

When join'd at Hymen's holy shrine,
What rapt'rous draughts of bliss were mine!
Love drew my trembling heart to thine,
My husband!

And when our little boy was born,
Who watch'd my bed from night till morn,
And sigh'd, and look'd like one forlorn?
My husband!

Who wept for joy to see me mend,
Whate'er my heart would wish for send?
Oh! how shall I describe my friend,
My husband!

Nor can I e'er forget that day,
When, rack'd with pain, I died away:
Thy looks then spoke what none can say,
My husband!

Who, when our little prattler died,
With placid look my grief would chide,
And tell me, he on God relied?
My husband!

Who, when I wept, would dry my tears,
And strive to calm my throbbing fears?
(Such kind regard the bosom cheers)
My husband!

Who to my wants would comfort bring,
And round my neck his arms would fling,
As if his soul to mine would cling?
My husband!

Thus all thy labour, all thy care,
Mine and my childrens' daily fare,
Demand from me this constant pray'r,
My husband!

That God, who reigns above the spheres,
And all our prayers and blessings hears,
May bless thy few remaining years,
My husband!

And, ere this heart shall cease to glow,
May heavenly love this gift bestow:
That I may live to lay thee low,
My husband!

For fear that thou shouldst misery find,
Or any wretch should prove unkind
To thee, if thou wert left behind,
My husband!

Yet *both* must bow to Heaven's behest;
What Heaven decrees is always best;
On heavenly love we all must rest,
My husband!

Boston. W. M.

THE BARDS OF BRITAIN,

BY JOSEPH BLACKET.

To Sir Richard Phillips, on his presenting the Author with "The Cabinet of English Poetry."

FRIEND of the advent'rous poet's infant muse!
Receive this tribute, nor the lay refuse;
Thy gift invests me with a godlike band,
The boast, the glory of my native land!

Dear, doubly dear, the precious treasures given!
Dear as the ruddy beam of light from heaven!
Unsullied treasures, with no dross combin'd,
Unsullied treasures of th' immortal mind;
Long sigh'd-for volumes, stor'd with truths divine,
And fancy's richest flow'rs—ye all are mine!

Though adverse fortune on my youth has frown'd,
And faithless friends inflicted many a wound;
Unnotic'd long; though oft, with grief sincere,
I heav'd the sigh and dropp'd the anguish'd tear;
Yet hope, at length, has built her downy nest,
O blessed change! within this throbbing breast!
This breast, where late the raven of despair
Sat brooding on the thorns of with'ring care.
Kind Heav'n, all-bounteous! gives a friend to save,
I seem re-born, or rescued from the grave!
And, in the precious boon which PHILLIPS sends,
My raptur'd heart receives a host of friends!
Friends who will sooth me in misfortune's gloom,
And to the MUSES' COURT convert my narrow room.

Methinks e'en now I see the mighty train
Encircle me around, and each alternate
Accept with smiles my homage. In the midst,
With deathless laurel blooming round thy brows,
My gaze is bent on thee, immortal youth!
On thee, whom most I pity, love, admire!
The beams of gladness sparkle in thine eyes,
Which, on the portrait of my fostering bard
Seem steadfast rivetted; and sure I hear
Thy voice exclaim,

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CHATTETTON.

" Happie itte bie for thie!
Reet mycle comforte wele betide thine houres!
Synne frae the mokie denne obscuritye
(Whilom, lyke myne, thie ruthful thornye bedde,)
An helpen honde hes gathered thie flowres,
Whilk growen by the sun uncheryshed,
Ande them haes setten, where hys biem devyne
May keepe them frae a Walpole's scowlying eyne."
Ill-fated bard! I mourn thy hapless fall!
But as a sky-harp'd seraph, now I hail
Thy form divine! and with exultance proud,
What thou hast left to this ungrateful world
Pronounce as mine!

TO MILTON.

Oh! heaven-illumin'd bard!
Whose wing seraphic soar'd above all height
In majesty of song! forgive, forgive,
That my rash hand should dare upon thy throne,
Thy starry throne, to place a hapless youth,
Though proudly favour'd by the weeping Nine,
Thy great superior alone in sorrow,
Mournful pre-eminence! Yes, thou wilt pardon;
And MILTON's tear on CHATTERTON's pale urn
Shall drop like balm from weeping cherub's eye.
O how thy awful daring I revere!
Thou through the gloom of *chaos* and old *night*,
Despotic rulers o'er the drear profound,
Travers'd with steadfast soul the pathless way;
Thou from the Stygian pool, on hierarch's wing,
Soar'd dreadfully sublime, and 'yond the stars,
Where human eye had never dar'd to look,
Explor'd the regions of eternal day,
And on heaven's pearly pavement fearless trod!
With reverential awe my trembling hand
Shall turn at midnight's hour thy volumes o'er;
Mount, on the wings of fancy, by thy side,
Visit the liquid deeps of hell below;
Then, rising on the pinion of the mind,
To heaven's extremest verge shall rapt ascend;
Till, for a moment, I forget myself,
Forget I sprang from dust and am a worm!

TO DRYDEN.

Dryden, too, appears,
To charm my wond'ring ears!
See, see, he rises in a car of state!
His heav'n-train'd steeds proclaim
His never dying fame,
The reins upheld with daring hand,
He guides them o'er the rugged mountain's brow,
Around whose base the limpid water's flow.
Hark! hark! his thund'ring wheels resound,
Through ether's concave wide.
His coursers feel the biting lash,
The swift revolving axles flash.
He spurns the trembling ground!
See, checking now with fierce command
Their dread career, in fullest pride,
He mounts on cherub wing, magnificently great!

TO POPE.

With piercing eye, deep vers'd in nature's lore,
Resolv'd the realms of reason to explore;
The paths of science, the retreats of sense,
And justify the ways of Providence;
Pope next I see, the bard whose various fire
Attunes the hallow'd or the tender lyre;
Tears off the fraudful mask that screens the mind,
And awes the varying follies of mankind:
Instructs the serious, and delights the gay,
Shews Fame's proud fane, and leads himself the way!

TO YOUNG.

With coffin'd shrouds surrounded, big with thought,
With painful thought, which moves yet mends the heart,
And swells to aw'd solemnity, see, Young
Deigns too to dwell beneath my humble roof!
The reliques of the dead, with full fix'd eye,
Denoting deep reflection, he surveys,
And smiles at "weak mortality!" Absorb'd
In contemplation, on the jarring world
He looks indignant. 'Cross the shoreless tide
Of full eternity his stedfast gaze
Is fix'd; nor once returns, save that he casts
One look of pity on disastrous man.

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TO THOMSON.

And THOMSON, nature's limner, *thou* art mine!
Thou, who hast painted the all blessed year,
Bringing the seasons full within my view,
E'en when sequester'd in this nook I sit;
The flow'ry dale, the steep aspiring hill,
The velvet bank, the desolated waste,
The pebbled streamlet, and the roaring flood—
Spring's tender fragrance—summer's noontide blaze—
Autumnal breezes—winter's icy blasts—
In all their sweet diversity of change!

TO COLLINS.

And COLLINS, too,
To thee I bow,
Bright fancy's fav'rite child,
Who in the desolated wild,
With all the varied sweets of song,
Pour'd forth the strain,
As o'er the plain,
Fleet echo did thy swelling notes prolong;
And, when the PASSIONS fir'd thy breast,
Upon some rocky steep,
Which fearful overhung the deep,
Thou with the frenzy of poetic fire,
Drew'st all the FURIES round thy magic lyre,
And mid the hideous yell
Of grisly spectres, fell
Revenge! despair!
And haggard care!
With harp in hand,
Didst take thy stand,
Now made them frantic rave, now lull'd them all to rest.

TO SHENSTONE.

As late from the blade waving meed,
Enamell'd with SPRING's vernal flowers,
The murmurs of Corydon's reed,
Were plaintively heard from the bowers.
Around him the frolicksome lambs,
In wantonness frisk'd to the note;
While wistfully gaz'd the fond dams,
Who seem'd on the younglings to doat.

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As centinel, laid at his feet,
  Poor Tray watch'd the flock on the plain;
And, pour'd from the thicket's retreat,
  Was heard the mellifluous strain.

Suspended, his crook, on the tree,
  Hung ready his hand to receive;
The ballad was plac'd on his knee,
  Which taught his fond bosom to heave.

But broken is Corydon's reed,
  Ah! ne'er shall we hear it again!
No longer his lambkins to feed,
  The shepherd shall traverse the plain.

But though he to death is consign'd,
  And no more the lov'd bard shall we see,
His song in a wreath is entwin'd,
  And that wreath forms a GARLAND for me!

TO GRAY.

Next see ethereal GRAY,
  Whose daring fancy took her flight,
  On eagle-wing to huge Plinlimmon's height,
And, as above his snow-capt brow she soar'd,
The fall of Cambria's children dear!
  The heavenly maid, in wild dismay,
    With Hoel's harp deplor'd,
While from her eyelids gush'd the soul-assuaging tear!

And oft when caution penn'd the guarded fold,
  Wrapt in his train I took my lonely way,
And listen'd pensive as *his* "curfew toll'd
  The dreary knell of the departed day!"

With ling'ring step, at midnight's awful noon,
  I sought the death-bed of the lab'ring hind;
Explor'd with him the spot with grass o'ergrown,
  And the rude stone which rustic skill design'd.

Oft shall his numbers soothe me to repose,
  Oft shall my bosom own their magic pow'r;
His moral lay the hallow'd truth disclose,
  And oft beguile the solitary hour!

TO GOLDSMITH.

Next hapless AUBURN's friend my bosom cheers,
Whom NATURE loves, and every muse reveres!
To him was given the high victorious art,
To gain a conquest o'er the human heart;
No party theme his generous bosom fir'd,
Far other strains his social soul inspir'd;
In thy bless'd cause, O VIRTUE he engag'd,
And 'gainst thy foes alone fierce war he wag'd.
He saw oppression seize the poor man's soil,
And bade the tyrant quit the impious spoil;
With grief he saw the dome of pow'r arise,
With shame he heard the hapless maiden's sighs!
He saw the prince encompass'd by a train
Of flatt'ring slaves, who spurn'd the harmless swain;
With weeping eye he view'd the lab'rer's lot,
Driv'n like an exile, from his plunder'd spot!
Each realm he trac'd, recording in his strains,
That land most bless'd—where prosper'd most the swains!
Poet belov'd! my vanquish'd heart is thine,
And beats with transport thus to call *thee* mine!

TO BURNS.

And whae is he that syngs sae weel,
And pens "Addresses to the Deil?"
Whae gies the sang syke bonny turns?
Daft Gowk! ye ken it's sonsie BURNS!

His gabby tales I love to hear,
They please sae meikle, run sae clear;
That ilka time, good traith, I read,
I'se wiser baith i'heart an head.

I wad advise, when runkled care
Begins to mak ye glow'r and stare,
That ye wad furst turn ow'r his leaf,
'Twill mak ye suon forget yer grief!

And should auld mokie sorrow freeten,
He's blythsome tale yer hearts will leeten;
And suor I am, ye grief may banter,
By looking ow'r his "Tam o'Shanter."

And, while I breathe, whene'er I'se scant,
Of cheerfu friends,—and fynde a want
Of something blythe to cure my glumps,
And free me frae the doleful dumps,

I'll tak his beuk, and read awhile,
Until he mak me wear a smile;
And, then, if I hae time to spare,
I'll learn his "Bonny banks of Ayr!"

Mathematical Department.

MATHEMATICAL QUESTIONS

IN NO. VI. ANSWERED.

1. Qu. (75) *Answered by Mr. Brewer, Private 2nd R. L. Militia.*

The area of the garden is readily found $= 3136320$ inches; and putting x for the depth of the pond, its diam. will be $8x$, and by mensuration $(48x + x^2) \times ,5236x = 25,6564x^3$ is its concavity; also $64x^2 \times ,7854 = 50,2656x^2$ is the surface of the pond. Hence, $3136320 - 50,2656x^2 = 25,6564x^3$, from whence x is found $= 48,98515$ inches $= 4,0820954$ feet, and $8x$, or the diameter, $= 32,65676$ feet.

Again, by Mr. B. Brooke.

Let $8x$ and x denote the diam. and depth of the pond; then its capacity will be $25,6564x^3$, and its surface $= 50,2656x^2$; but by the question $25,6564x^3 + 50,2656x^2 = 3136320$ inches $=$ the area of the garden; whence $x = 48,9848$, therefore the diam. is 10,8855, and the depth 1,3607 yards.

In the same manner it was answered by Messrs. *J. Baines*, Reading; *J. Bamford*, Holthead; *W. Bruster*, Donington; *J. Butterworth*, Haggate; *J. Cattrall*, Plymouth; *J. Cummins*, Holbeck; *W. Dunn*, Broughton;

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J. Ely, Doveridge; *J. Gawthorp*, Leeds; *W. Harrison*, Burton; *J. Hine*, Plymouth; *S. Jones*, Liverpool; *M. Macann*, Lutton; *R. Maffett*, Plymouth; *A. Nesbit*, Farnley; *Rylando*; *J. Smith*, Alton Park; *E. Webster*, Armley Mills; and *J. Winward*, Plymouth.

2. Qu. (76) *Answered by Messrs. Bamford, Cummins, and Ely.*

By adding the given surfaces together, we have 314,16 for the whole surface; from whence we find the diam. = 10, and the circumference = 31,416; then, by mensuration, $6\frac{2}{3}$ is the depth, and 4,713 the radius of the segment immersed; therefore its solidity, or the quantity of water displaced, is 387,851; but, by the principles of hydrostatics, 1728 : 387,851 : : 1000 : 14,028 lbs. = the weight of the globe.

Again, by Messrs. Brooke, Bruster, and Webster.

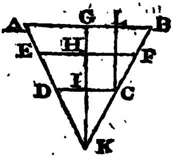
The diameter of the globe is $= \sqrt{\dfrac{209,44 + 104,72}{3,1416}} = 10$, hence $\dfrac{209,44}{3,1416 \times 10} = 6\frac{2}{3}$ is the height of the immersed segt. and $\dfrac{90 - 40}{3} \times ,5236 \times \dfrac{400}{9} = 387,851$ is its solidity. Therefore, by hydrostatics 1728 : 387,851 : : 1000 : 224.45 ounces the weight required.

The same, by Messrs. Macann and J. Smith.

Since the curve surface of the globe is given = 314.16 inches, its diam. is easily found = 10 in. and as the superficies of spherical segments are as their altitudes, we have the height of the immersed segment $= \dfrac{10 \times 2}{3}$, and its solid content $= \dfrac{10472}{27}$ cubic inches, is the content of the water displaced by the globe; therefore, by hydrostatics, 1728 : 1000 : : $\dfrac{10472}{27}$: 224,4513 ounces, is the weight, as before.

It was answered also by Messrs. *Armitage*, *Baines*, *Brewer*, *Cattrall*, *Gawthorp*, *Hine*, *Jones*, *Maffett*, *Nesbit*, *Rylando*, *Tomlinson*, and *Winward*.

3. Qu. (77) *Answered by Mr. J. Smith, Alton Park.*



Let ABCD and ABK represent vertical sections of the conic frustum and the cone completed, EF the dividing section; and draw LC parallel to GK. Then by sim. triangles LB $= 2 : LC = 12 :: GB = 5 : GK = 30$, therefore, $IK = GK - GI = 18$.

Put $,7854 = n$; then, by mensuration, $AB^2 \times GK \times \frac{n}{3} = 1000n$, is the content of the cone ABK, and $DC^2 \times IK \times \frac{n}{3} = 216n$, is the solidity of DCK. Half the difference of these $= 392n$ is the solidity of the frustum EFCD, which, added to $216n$, gives $608n$ for the solidity of the cone EFK. Now, the cones ABK, EFK, being similar solids, we have $\sqrt[3]{1000n} : \sqrt[3]{608n} :: GK = 30 : HK = 30\sqrt[3]{\frac{608}{1000}} = 3\sqrt[3]{608} = 6\sqrt[3]{76} = 25.41494$; therefore, $HI = HK - IK = 7,41494$ is the distance required.

Again, by Mr. Armitage, Rochdale Academy.

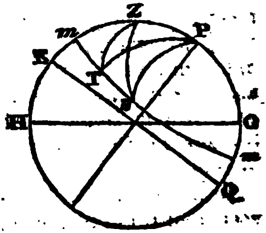
First, $16 - 6 : 12 :: 6 : 18$ = what the cone wants in length to be complete, and $18 + 12 = 30$ = length of the whole cone; then, by sim. solids, as $\sqrt[3]{785,4}$ (= content of the whole cone) : $30 :: \sqrt[3]{477,5232}$ (= the solidity of the top cone and half frustum) : $25,41494$, and the distance from the bottom $= 25,41494 - 18 = 7,41494$, as before.

Otherwise, by Mr. J. Cattrall, Fifer 2nd R. L. Militia.

By similar triangles $LB : LC :: BG : GK = 30$; consequently, 785,4 is the solidity of the whole cone, and 615,7536 is the solidity of the frustum; whence, $785,4 - 615,7536 = 169,6464$ = solidity of DCK, therefore, $169,6464 + \frac{615,7536}{2} = 477,5232$ is the solidity of **KEF**, and by sim. solids, &c. as in the other solutions.

This question was answered also by Messrs. *Baines*, *Bamford*, *Brewer*, *Brooke*, *Bruster*, *Cummins*, *Ely*, *Eyres*, *Gawthorp*, *Harrison*, *Hine*, *Jones*, *Macann*, *Maffett*, *Nesbit*, *Rylando*, *Webster*, and *Winward*.

4. Qu. (78) *Answered by Mr. A. Nesbit, Farnley Academy*



In the annexed figure, let HO denote the horizon, EQ the equinoctial, *m m* the parallel of the sun's declination, S the sun's place when his rays were parallel to the front of the house, T his place when they were perpendicular to it, Z the zenith, and P the north pole. Then, in the spherical triangle SZT, we have the first zenith distance $SZ = 48^\circ\, 5'$, the second zenith distance $TZ = 31^\circ\, 52'$, and the $\angle SZT = 90^\circ$, to find $ST = 55^\circ\, 26'$, and the $\angle TSZ = 39^\circ\, 52'\, 32''$.

Again, in the triangle SPT, we have the polar distance $SP = TP = 66^\circ\, 37'$, and ST, to find the $\angle TSP = 76^\circ\, 52'\, 2''$, from which take the $\angle TSZ$, and we obtain the $\angle PSZ = 36^\circ\, 59'\, 30''$.

Lastly, in the triangle PSZ, we have the sides SP and SZ, and their included angle, to find $PZ = 35^\circ\, 50'\, 16''$, the co-latitude of the place, and the $\angle SZP = 109^\circ\, 23'\, 43''$, the sun's azimuth from the north, at the time of the first observation. Hence, the latitude of the place is 54° 9′ 44″ N. and the declination of the front wall 19° 23′ 43″ from the east or west.

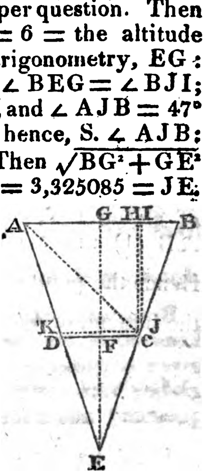
Again, (by the terrestrial globe) by Mr. S. Jones, Liverpool.

Bring any place through which a meridian passes, as London, to the brazen meridian, and under the first given altitude, on that meridian, make a mark upon the globe; turn the globe on its axis eastward 90°, (by the question) and under the second given altitude, on the brazen meridian, make another mark on the globe; bring the north pole towards the southern edge of the horizon, and at the same time turn the globe on its axis till the two marks appear in the horizon, the horizon will then cut the brazen meridian at $59\frac{1}{2}$ degrees, the sun's meridian altitude on the given day, whence the zenith distance $30\frac{1}{2}$ degrees, added to the declination $= 23\frac{1}{2}$ N. gives the latitude of the place $= 54^\circ$ nearly. The globe still remaining in the same position, thrust a quill between the globe and the brazen meridian, to keep the globe from turning on its axis, and elevate the north pole 90°; the meridian (of London) which passes through the first mark, will cut the horizon in S.S. E. $\frac{3}{4}$ E. nearly, which is the declination of the wall.

In the same manner exactly as the first solution, it was answered by Messrs. *Baines, Cattrall, Gawthorp, Hine, Kay, Maffett, Rylando, Smith,* and *Winward.*

5 Qu. (79) *Answered by Mr. Baines, and Mr. Bruster, Donington.*

Let the lines be drawn as in the annexed figure, where AJ represents the surface of the liquor before coming to rest, and $\angle BAJ = 43^\circ$ per question. Then BH (1) : HC (3) :: BG (2) : GE $= 6 =$ the altitude of the complete cone. Again, by trigonometry, EG : radius :: BG : tan. $18^\circ\, 26'\, 5''\, 49''' = \angle BEG = \angle BJI$; moreover $\angle AJI = 90^\circ - 43^\circ = 47^\circ$, and $\angle AJB = 47^\circ + 18^\circ\, 26'\, 5''\, 49''' = 65^\circ\, 26'\, 5''\, 49'''$; hence, $\overline{\text{S.} \angle AJB}$: AB :: S. $\angle BAJ$: BJ $= 2{,}99947$. Then $\sqrt{BG^2 + GE^2} = BE = 6.324555$, and $BE - BJ = 3{,}325085 = JE$. Now by similar triangles EG : AB :: EJ : JK $= 2{,}102968 =$ diameter of the hoof at the section, also BE : EG :: BJ : JI $= 2{,}845547 =$ perp. height of the hoof. Then, by Hutton or Bonnycastle,



$$\frac{AB^2 - JK\sqrt{(AB.JK)}}{AB - JK} \times IJ \times AB$$

$$\times\ ,2618 = \frac{16 - 6{,}09928}{4 - 2{,}102968} =$$

$(5{,}21905) \times 4 \times 2{,}845547 \times {,}2618 = 15{,}552$ cubic inches = content of the hoof AJB, which was the part A drank. But $(4^2+2^2+4\times2)\times{,}2618\times3=21{,}9912$ cubic inches = the capacity of the glass.

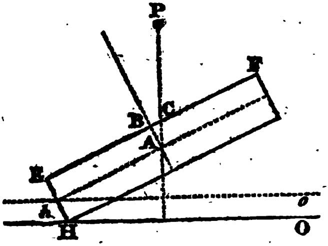
Therefore we have $21{,}9912-15{,}552=6{,}4392$ = B's share, and

$$\text{As } 21{,}992 : 6d. :: \begin{cases} 15{,}552 : 4d.\ 243 + \text{ or about } 4\tfrac{1}{4}d. \\ \quad\text{A must pay.} \\ 6{,}4392 : 1d.\ 756 + \text{ or about } 1\tfrac{3}{4}d. \\ \quad\text{B must pay.} \end{cases}$$

And thus very nearly it was answered by Messrs. *Armitage, Brewer, Brooke, Cattrall, Cummins, Dunn, Ely, Gawthorp, Hine, Jones, Macann, Maffet, Nesbit, Rylando, Smith, Webster,* and *Winward.*

6. Qu. (80) *Answered by Mr. Bruster, Donington.*

The cylinder being supposed of equal density throughout, the centre of gravity will of course be the middle point of its axis; and at any given elevation, the line of suspension continued will always pass through the centre of gravity, and make an angle with the middle section equal to the given angle of elevation.



In the annexed scheme P is the point of suspension, HO and *ho* are parallels to the horizon, and the angle of elevation A*ho* = ∠ BAC = 25° 15′. As rad. : AB (1) :: tan. (25° 15′) ∠ BAC : ,47163 = BC. Hence the point $C=\frac{10}{2}\pm{,}47163=5{,}47163$ feet from the bottom, or 4,52837 feet from the top end.

Again, by Messrs. Baines, Brewer, Cattrall, Ely, and Smith.

Let A be the centre of gravity, and PC the string; then, when the cylinder is at rest, PC will pass through

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A,; therefore, in the triangle ABC, we have all the angles, (for the angle BAC is = angle A*ho*) and the side AB, to find BC = ,47163; whence FC = 5,47163, and CF = 4,52837 feet, as required.

This question was answered also by Messrs. *Armitage*, *Brooke*, *Cummins*, *Eyres*, *Gawthorp*, *Hine*, *Jones*, *Kay*, *Maffett*, *Nesbit*, *Rylando*, *Webster*, and *Winward*.

7. Qu. (81) *Answered by Mr. Gawthorp, Mr. Nesbit, and Rylando.*

Put $z = x - 1$; then $\dot{z} = \dot{x}$, and $2z = 2x - 2$, therefore, $2z + 1 = 2x - 1$, and $(2z + 1) \times z = 2x^2 - 3x + 1$; hence the given fluxion will be transformed to $\frac{\dot{z}}{2z^2 + z} = \frac{z^{-2}\dot{z}}{2 + z^{-1}}$; whose fluent is $\frac{2,30258}{-1} \times$ log. $2 + z^{-1} = -1 \times$ hyp. log. $2 + \frac{1}{z}$; and by restoring x we have $-1 \times h. l.\ 2 + \frac{1}{x - 1}$ for the fluent required.

Nearly thus it was answered by Messrs. *Hine*, *Jones*, *Maffett*, *Whitley*, and *Winward*.

8. Qu. (82) *Answered by Mr. Gawthorp and Mr. J. Whitley.*

Let $z = \frac{1}{4}(d + v)$, then, $\dot{z} = \frac{\dot{v}}{4}$, and $\frac{\dot{z}}{d}\sqrt{(d^2 - 4dz + 8z^2)} = \frac{\dot{v}}{4d}\sqrt{(\frac{1}{2}d^2 + \frac{1}{2}v^2)} = \frac{\sqrt{2}}{8d} \times \dot{v}\sqrt{(d^2 + v^2)}$; whose fluent, by *prop.* 73, *p.* 178, *Vince's* Fluxions, is found $= \frac{\sqrt{2}}{8d} \times \left\{\frac{v}{2}\sqrt{(d^2 + v^2)} + \frac{d^2}{2} \times h. l. (v + \sqrt{(d^2 + v^2})\right\} + C$. This expression ought to vanish when $z = o$; hence $C = \frac{d}{8} - \frac{d\sqrt{2}}{16} \times h. l. (d\sqrt{2} - d)$; therefore, the correct fluent, generated while z increases from o to $d = 10$, is equal to $\left(\frac{3d\sqrt{5} + d}{8}\right) + \frac{d\sqrt{2}}{16} \times h. l.$

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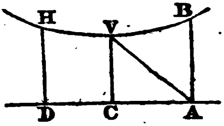
$$\left(\frac{3+\sqrt{10}}{\sqrt{2}-1}\right) = \left\{(3\sqrt{5}+1)+\frac{\sqrt{2}}{2}\times h.l.(3+\sqrt{10})\right.$$
$$\left.\times\ (1+\sqrt{2})\right\} \times \frac{d}{8} = 1{,}20215 \times d = 12{,}0215$$ as required.

And thus it was answered by Messrs. *Hine*, *Maffett*, *Nesbit*, *Rylando*, and *Winward*.

Otherwise by Mr. S. Jones, Richmond Academy, Liverpool.



With semiaxes C D, C V, each $= \frac{1}{4}d$. describe the equilateral hyperbola H V B, draw the ordinates D H, AB, and join A V; by a known property of the hyperbola, $AB = AV = (CD^2 + CA^2)^{\frac{1}{2}}$; put $DA = z$, then, $CA = z - \frac{1}{4}d$. and $AB = \frac{1}{\sqrt{8}} \times \sqrt{(d^2 - 4dz + 8z^2;)}$ but the fluxion of the area A D H B A = A B × fluxion $AD = \dot{z} \times \frac{1}{\sqrt{8}} \times \sqrt{(d^2 - 4dz + 8z^2)}$, consequently the fluent of $\frac{\dot{z}}{d}\sqrt{(d^2 - 4dz + 8z^2)} = \frac{\sqrt{8}}{d} \times$ area ADHVBA; as required.

9. Qu. (83) *Answered by Mr. Elias Webster, Armley Mills.*

Take $y = x - r$, and $z = x + 2r$; then, the first becomes a square, and it only remains to make $x^2 - 6rx - 6r^2$, and $x^2 - 2rx - 5r^2$ squares; to effect which, let $x^2 - 6rx - 6r^2 = (x - nr)^2$, and we get $x = \frac{n^2+6}{2n-6} \times r$. This value of x substituted for it in the latter formula, we obtain, by reduction, $n^4 - 4n^3 + 4n^2 + 96n - 72$; which must be made a square. Assume $p^2 + 5$ for its root, and we shall find $p = 8$; and $n = 9$; therefore, $x = \frac{29r}{4}$.

Exam. Take $r = 4$, then $y = 25$, $x = 29$, and $z = 37$; three numbers that answer the conditions of the question. And thus exactly it was answered by Mr. *Nesbit* and *Rylando.*

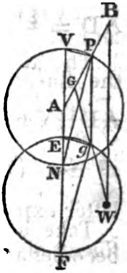
Another answer, by Mr. Gawthorp.

Assume $x = y + v$, and $z = 7 + 3v$; then the three formulæ become $y^2 + 4yv + 4v^2$, $y^2 - 4yv - 11v^2$, and $y^2 - 6v$; the first *is* a square, and by equating the second with $\left(y - \frac{9v}{2}\right)^2$, we get $y = \frac{25v}{4}$; which substituted for y in the third it become $\frac{529v^2}{16}$ = a square; let $v = 4a$, then $y = 25a$, $x = 29a$, and $z = 37a$.

Exam. When $a = 1$, y is $= 25$, $x = 29$, and $z = 37$; if $a = 2$, $y = 50$, $x = 58$, and $2 = 74$; &c.

Very good answers were sent by Messrs. *Hine, Jones, Maffett, Wainman (of Armley Mills),* and *Winward.*

10. Qu. (84) *Answered by Mr. J. Whitley, Masbro'.*



Let A B represent the given rod, revolving about the point A, in the vertical plane V P N, and B W the string fastened to the rod at B, having the given weight W attached to its lower extremity.

Let G be the centre of gravity of the rod; then, the segments A G, G B, will be given; join G W, and from g, the common centre of gravity of the rod and weight, draw g P parallel to W B, meeting A B in P.

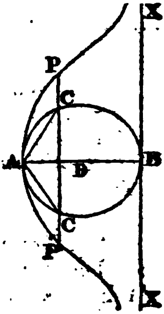
Put w for the weight of the rod, and, by *Art.* 37, *Marrat's Mechanics*, and sim. triangles, we have, W + w : W :: G W : Gg :: W B : gP :: G B : G P, and since W, w, W B, and G B, are given, g P, G P, will be given magnitudes; hence A P is given, and the *locus* of P is evidently the given circle P V N.

Draw the vertical diam. V N parallel to g P, or W B, and complete the parallelograms Pg E V, and Pg F N; then, because V N is given in length and position, and V E, N F, are each equal to the given line Pg, the points E, F, are given, and since Eg, gF, are respectively parallel to V P, P N, the angle Eg F is equal to the right angle V P N; consequently, the locus of the point g required, is the given circle Eg F E.

Cor. The circles Eg F E, V P N V are equal.

Very nearly as above were the solutions by Messrs. *Brooke, Butterworth, Eyres, Gawthorp, Hine, Jones, Kay, Maffett, Nesbit, Rylando,* and *Winward.*

11. Qu. (85) *Answered by Messrs. Eyres, Hine, Maffett, and Winward.*



Put AB $= a$, A D $= x$, and DP $= y$; then, by the property of the circle, AC^2 $= a\,x$, and D C $= \sqrt{(a\,x - x^2)}$ also, by the question, $y \times \sqrt{(a\,x - x^2)} = a\,x$, therefore, $y = \dfrac{a\,x}{\sqrt{(a\,x - x^2)}}$ is the equation of the curve.

When $x = o$, y is $= o$ also, therefore the curve begins at A; when $x = a$, then y is infinite; consequently, B X is an assymptote to the curve.

The fluxion of the area is $y\,\dot{x} = \dfrac{a\,x\,\dot{x}}{\sqrt{(a\,x - x^2)}} = a \times \dfrac{x^{\frac{1}{2}}\,\dot{x}}{\sqrt{(a - x)}}$, to integrate which put $x^{\frac{1}{2}} = z$, and by taking the fluxions, and substituting the latter expression is transformed to $2a \times \dfrac{z^2\,\dot{z}}{\sqrt{(a - z^2)}}$, the fluent of which by *Art.* 279, *Simpson's. Fluxions,* is found $= 2\,a \times \left\{\dfrac{a^2\,A}{2} - \dfrac{z}{d}\sqrt{(a - z^2)}\right\} = 2\,a \times \left\{\dfrac{a^2\,A}{2} - \frac{1}{2}\sqrt{(a\,x - x^2)}\right\}$, where A is *a cir. arc.* to rad. unity, and sine $\dfrac{x^{\frac{1}{2}}}{a^{\frac{1}{2}}}$.

When $x = a$ this expression becomes $a^2 \times 1{,}5708$; therefore $2 \times 1{,}5708\ a^2$ is the whole area included between the assymptote and curve.

Remark. The above curve is a line of the *second* order, having two equal branches lying on contrary sides of AB.

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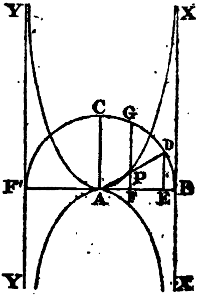
Mr. S. Jones finds the quadrature thus.—The fluxion of the area is $y\dot{x} = \frac{2ax\dot{x}}{\sqrt{(2ax-x^2)}}$ $(2a = AB) = 2a \times \left(\frac{a\dot{x}}{\sqrt{(2ax-x^2)}} - \frac{a\dot{x}-x\dot{x}}{\sqrt{(2ax-x^4)}}\right)$; the fluents of which give the area APD $= 2a \times$ (*arc* AC — CD), and when D coincides with B, the whole infinite space ABXP $= 2a \times$ semicircle ACB $= 1{,}5708 \times AB^2$.

It was answered also by Messrs. *Gawthorp*, *Kay*, *Nesbit*, *Rylando*, and *Whitley*.

12. Qu. (86) *Answered by Messrs. Hine, Maffet, and Winward.*



Complete the semicircle BCF′, and draw the lines as per question: Put AB $= a$, AF $= x$, and FP $= y$; then by similar △s PF : FA :: DE $=$ FA : EA, that is, $y : x :: x : \frac{x^2}{y} =$ AE; ∴ EB $= a - \frac{x^2}{y}$, and F′E $= a + \frac{x^2}{y}$, and by the circle F′E . EB $=$ ED², that is $\left(a + \frac{x^2}{y}\right) \times \left(a - \frac{x^2}{y}\right) = x^2$, or $a^2y^2 - x^2y^2 = x^4$, and $y = \frac{x^2}{\sqrt{a^2 - x^2}}$, the equation of the curve.

If $x = o$, then $y = o$, and the vertex of the curve is at A, and when $x = a$, then y is infinite, ∴ if BX be drawn ⊥ to BA it will be an assymptote to the curve. The curve is a line of the fourth order having two infinite branches on each side of BF.—Quadrature—The fluxion of the area AFP $= y\dot{x} = \frac{x^2\dot{x}}{\sqrt{a^2 - x^2}}$, the fluent of which, by *Simpson's Fluxions, Art.* 279, is found $= \frac{1}{2}a^2A - \frac{1}{2}x\sqrt{a^2 - x^2}$, where A is a circular arch, whose rad. is unity and sine $\frac{x}{a}$, and when $x = a$, this becomes $= a^2 \times {,}7854 =$ the area of the quadrant ABC.

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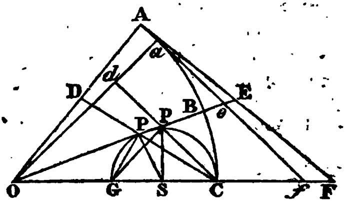
therefore, the whole area on each side of the diameter BF is = to the circle whose rad. is *a*. *W. W. R.*

Exactly as above, the question was answered by *Mr. S. Jones.*

A mistake in the question prevented several gentlemen from answering it; it ought to have been "FG parallel to DE meets AD in P." Observations, supplying the defect one way or other, were sent by Messrs. *Gawthorp, Eyres, Nesbit, Rylando, &c.*

13 Qu. (87) *Answered by Mr. J. Whitley, Masbro'.*



Construction. Divide the radius OC (1) in G, so that $T : t :: OC : OG$ (T and t being the tangents of the given hours arches 75° and 60°). On GC describe the semicircle GPC; to meet which in P, P, draw OB, making the angle BOC = 21° the given angle; join PC, and perpendicular to it draw the radius OA; then having drawn AF, the tangent of the arc AC, find a fourth proportional to T, AF, and OC: which will be the sine of the required latitude.

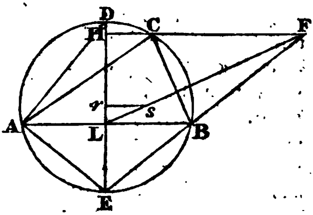
Demonstration. Let CP, OP, meet OA, AF, in D, E; and join PG. The angle BOC is equal to the given angle (21°) by construction. And by the principles of Dialling rad. : S. lat. :: tan. hour arch : tan. hour angle : therefore $T : t$ :: tan. of the greater hour angle : tan. of the lesser :: (by const. and parallel lines) OC : OG :: CD : PD :: AF = tan. ∠ AOC : AE = tan. ∠ AOB, hence by equality T : AF :: rad. S. lat. *Q. E. D.*

Computation. Draw PS to the centre S of the semicircle. Then tan. 75° : tan. 60° :: rad. 1 : OG = ,4641; hence GC = ,5359, GS = SP = ½ GC = ,26795, OS = ,73205. And by trigonometry PS : S. ∠ POS = 21° :: OS : sine of 78° 16′ or 101° 44′ = ∠ OPS; ergo ∠ OSP = 80° 44′ or 57° 16′, and ∠ QCD = ½ ∠ OSP = 40° 22′ or 28° 38′, the compliment of which is 49° 38′ or 61° 22′ = ∠ DQC; then as tan. 75° : tan. ∠ D O C :: rad. : sine of 18° 22′ 24″ or 29° 23′ 29″ the required latitude. Vide *Prob.* 151, *Emmerson's Algebra.*

Remark. The angle B O C will be a maximum when O P is a tangent to the semicircle at P; in which case the sine of the latitude will be equal to $\frac{1}{\sqrt{(T.t)}}$; that is, equal to unity divided by the mean proportional between the natural tangents of the given hour arches. As the demonstration cannot be well effected without drawing another figure, I have therefore omitted it.

Other true answers were sent by Messrs. *Cattrall, Gawthorp, Hine, Jones, Kay, Maffett, Nesbit, Rylando,* and *Winward.*

14. Qu. (88) *Answered by Messrs. Hine, Jones, Maffet, and Winward.*



Construction. On A B the given base, describe the segment of a circle to contain the given angle; complete the circle, and draw the diameter D E perp. to A B, bisecting it in L; join E B, and in L D take any point *r*, and draw *r s* parallel to A B, take *r s* such, that L*r* may be to 4 *r s* in the given ratio; from L through *s*, draw L F meeting E B produced in F; draw F H parallel to A B cutting the circle in C, join A, C; B, C; and A C B is the △ required.

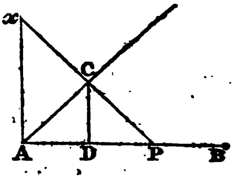
Demonstration. Join A E and A D; then by the similar triangles ALD, HEF, HF : H E :: L D : L A = L B; and alternately, H F : L D :: H E : L B :: 4 H E : 4 L B; therefore H F × 4 L B = 4 L D × H E = $\overline{AC + CB}^2$; (Prop. 7. M. G. Student). Again, by similar triangles L*r s*, L H F, L*r* : *r s* :: L H : H F, and (by Leslie's Geom. book v. Prop. 13,) L*r* : 4 *r s* :: L H : 4 H F :: L H . L B : 4 L B . H F = $\overline{AC + CB}^2$ in the given ratio by construction, and the base and vertical angle are of the given magnitude. *Q. E. D.*

Otherwise, by Messrs. Butterworth and Kay.

Analysis. Suppose the thing done. and that ACB is the triangle required; then, by the question, the ratio of $(AC + BC)^2$ to the area of the triangle ACB is given, but the angle ACB being given, the ratio of $(AC + BC)^2 - AB^2$ to the area of the given triangle is given also; *(Eu. Data,* 76,) therefore, the ratio of $(AC + CB)^2$ to $(AC + BC)^2 - AB^2$ is given, and, by division, the ratio of $AB^2 : (AC + BC)^2$ is given; but AB^2 is given, therefore $(AC + BC)^2$ is given, consequently the area is given: hence we have the base, vertical angle, and the area to construct the plane triangle, which is a well-known problem.

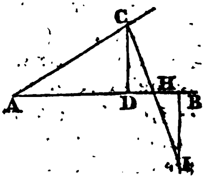
Other answers were sent by Messrs. *Eyres, Gawthorp, Macann, Nesbit, Rylando,* and *Whitley.*

15. Qu. (89) *Answered by Messrs. Hine, Maffett, Rylanda, and Winward.*



Analysis. Imagine it done, and that the point C is found; take BP an nth part of the given line, join PC, also draw CD perp. to AB, and Ax parallel to CD, meeting PC produced in x; then, $n.DB - m.DC = nPB = n.DB - n.DP$, and by equal additions and subtractions, $n.DP = m.DC$, or $m : n :: DP : DC$; and by parallel lines $PD : DC :: PA : Ax$; therefore $m : n :: PA : Ax$ is a given ratio, and PA is given, therefore Ax is given, and x is a given point; hence this construction—Take BP an nth part of the given line, and draw Ax perp. to AB, take Ax a fourth proportional to m, n, and PA, join xP, which will cut AC in C, the point required; the truth of which is evident from the Analysis.

Again, by Mr. S. Jones, Richmond Academy, Liverpool.



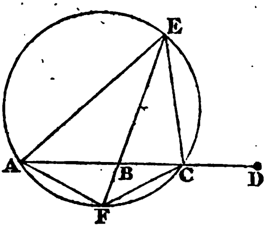
Construction. Take HB = an nth part of the given line, and draw BI at right angles to AB, and such that $IB : HB :: n : m$, join I, H, which produce to meet AC in C, the point required.

Demonstration. Drop the per

pendicular CD, then the triangles HBI, HDC are similar, and $CD : HD :: IB : HB :: n : m$, by construction; therefore, $m.CD = n.HD = n.DB - n.HB$, add $n.HB - m.DC$ to both sides, and $n.DB - m.DC = n.HB =$ the given line by the construction. *Q.E.D.*

And in the same manner it was answered by Messrs. *Butterworth*, *Eyres*, *Gawthorp*, *Kay*, *Nesbit*, and *Whitley*.

16. Qu. (90) *Answered by Rylando.*

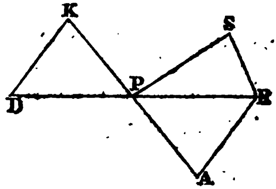


Composition. Let AD be the given right line, and A, B, C, D, the given points in it; make the angles BAF, BCF, each equal to half the given vertical angle, and through the points A, F, C, describe a circle; through B draw FE, to meet the circle in E, join AE, CE, and AEC will be the triangle required.

Demonstration. For the $\angle ACF = \angle AEF = \angle CAF = \angle CEF$, being in equal segments of the same circle; therefore, EF bisects the $\angle AEC$, and passes through the point B; also, by construction, the sides AE, CE, and AC, pass through the points A, C, and D, respectively. *Q. E. D.*

Almost exactly in the same manner were the answers given by Messrs. *Butterworth*, *Gawthorp*, *Jones*, *Kay*, and *Whitley*. And other elegant answers were sent by Messrs. *Eyres*, *Hine*, *Maffett*, *Nesbit*, and *Winward.*

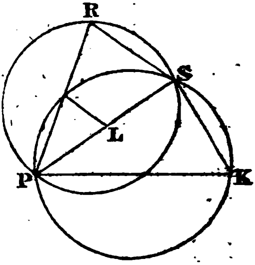
17. Qu. (91) *Answered by Messrs. Eyres, Hine, Maffett,* and *Winward.*



Analysis. Suppose it done, and DR drawn as required through the given point P; join KP, SP, and produce KP to A, making $KP.PA =$ the given space, that is $KP.PA = DP.PR$, or KP :

PD : : PA : PR ; and since the ∠ KPD = ∠ RPA, the triangles KPD, PAR, are similar, and ∠ PRA = ∠ PDK = a given ∠, and PA is a given line ; hence, the locus of R is a given circle, but PS is a given line, and PRS a given ∠, therefore the locus of R is also a given circle ; the intersection of these loci, determines the point R, through which the required line may be drawn as required. *Ergo Solutum.*

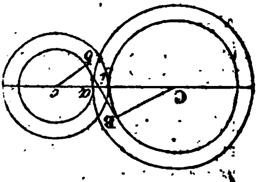
The same answered by Messrs. *Butterworth, Kay, Rylando,* and *Whitley.*



Composition. Let PKS, be the given points; join them, and upon PK, PS, describe segments of circles to contain the given angles ; in PS take the point L, so, that the rectangle PS × PL may be equal to the given rectangle PR × PD; make the ∠ PLD = the given ∠ PRS, and draw LD meeting the circle in D; through D, draw PDR, and the thing is done. For, as the ∠ PLD is equal to the ∠ PRS, by construction, the triangles PRS, PLD are similar, and PR : PL : : PS : PD, and consequently PR × PD = PL × PS = the given rectangle.

It was answered also by Messrs. *Eyres, Gawthorp, Jones,* and *Nesbit.*

18. Qu. (92) *Answered by Mr. A. Hirst, the Proposer.*



Let CA and *ca* be the radii of *two* wheels, B*b* a common tangent, C*c* a line joining their centres, *i* the intersection of B*b*, C*c*; then, when the teeth have the epicycloidal form, which is now well known to be the best, they will always act upon each other in the common tangent B*b*, and they evidently act with the greatest advantage at the point of intersetion i; but that they may move with the least fric each tooth must move with equal velocities at i, in o to which, Ci must have to ci, the direct ratio of t radii, their number of teeth, &c.

That is, because the triangles CBi, cbi are sim we have $CB = CA : cb = ca :: Ci : ci$; whenc appears that the radii, or diameters of the wheels, cluding the length of the teeth, are directly as number of teeth.

In order to apply the numbers given in the questi as an example, we have 60 feet = 720 inches, and tw the depth of the working point is 2,6 inches, also 720 2,6 = 717,4; then, 1000 : 717,4 :: 100 : 71,74 :: 7,174, consequently 71,74 + 2,6 = 74,34 inches the diameter of the greater wheel, and 7,174 + 2,6 9,774 inches is the diameter of the less.

Note. When the great wheel is *much* larger than small one into which it works, the teeth of the sm wheel will come off to an edge, and, consequen cannot work the full depth; in this case we must p portion the diameter of the large wheel to the dept which it works, to the whole depth of the small wh as above.

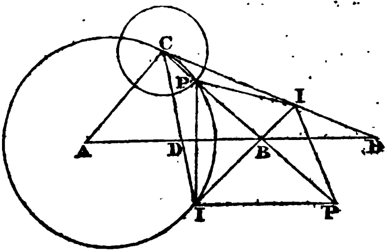
A pair of wheels made according to the above meth under my direction, were lately put up by a frien mine, and they are now working, the small one at rate of 400 revolutions in a minute, and with the l noise of any I have ever yet heard.

It is well-known that the difficulty of pitc wheels increases with the difference of their diamet

Other answers were sent by *Mr. Gawthorp* and *Nesbit.—Rylando* refers to art. 163, Marrat's Mecha for a true solution to this question, and observes tha original solution in the Gentleman's Diary for 1 from whence that article was taken, was invente the late Mr. John Banks, Lecturer in Natural Philos at Manchester; and that he, Rylando, had this info tion from Mr. Saul, the proposer of the question.

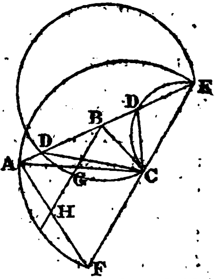
As this is a question of great utility in practice, trust our able correspondents will some of them gi their farther opinions on this difficult subject.

19. Qu. (93) *Answered by Rylando.*



ANALYSIS. Let ABC be the required triangle, CD the line dividing the base AB in the given ratio. Make DI : DC equal the given ratio, and join IB; then CI and the angle CBI are given; also the ratio of CA : BI is given, and the locus of B is a given circle. Hence we have given the base, vertical angle, and sum or difference of one side, and a line to which the other side has a given ratio, to determine the triangle. Take BP : BI in the given ratio, and join IP; the ∠ CBI, and ratio BI : BP being given, the ∠CPI will also be given, and the locus of P will be a given circle passing through C, I, to contain the ∠ CPI : and since BP is the line to which BI has the given ratio, the line CP will obviously be given, and of course the locus of P is likewise a circle to center C and given radius CP : the intersection of these two known circular loci determines P, and, consequently, the triangle ABC. The point P will fall on the same, or the contrary side of B, with regard to C, according as the second datum is the difference or the sum of BC, CA.

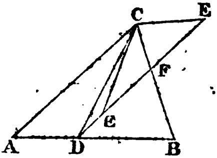
Again, by Mr. Whitley, Masbro'.



Let ABC represent the triangle required, and BG the given line dividing the base AC into the segments AG, GC having a given ratio. Through C draw EF parallel to BG, meeting AB in E, and AF a parallel to BC in F; and let BG produced meet AF in H. Then by similar △s, GC : AG :: GB : GH = a given line, because GB and the ratio of GC to AG are given. By parallel lines AG : AC :: GH :

$CF :: BG : CE$; but the ratio of AG to AC being given, and GH, GB given lines, therefore CF, CE, and EF are given. Take AD equal to the given sum or difference of the sides AB, BC, then BD will be equal to BC; and because the angle ABC is given, the triangle CBD will be given in species; therefore the angle D is given; and because AF is parallel to BC, the angle FAE is equal to CBE, a given angle; and, consequently, since EF, EC are given lines, the *loci* of the points A, D, are two given circular segments; hence the problem is reduced to this. To draw from E the point of intersection of two given circles, the right line EA so that the part thereof AD intercepted by their peripheries shall be of a given length; which is Prob. 27th, Simpson's Geom.

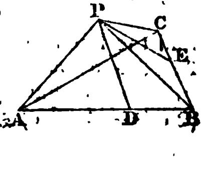
The same, by Mr. J. Butterworth.



ANALYSIS. Suppose the thing done, and that ACB is the triangle required, and CD the given line, dividing the base AB in D in the given ratio of $m : n$; draw DF parallel to AC, meeting BC in F, and upon FD take FE equal to FB, and join CE. Then, by similar triangles $m + n : n :: AC : DF :: BC : BF :: AC \pm BC : DF \pm BF$; but $AC \pm BC$ is given, therefore $DF \pm BF = DE$ is given; again, the ratio of BF $(FE) : FC$ is given, and the angle EFC is given, therefore the triangle EFC is given in species, and consequently the angle DEC is given; but DC and DE are given, therefore CE is given, and consequently CF is given, therefore BC, and AC are given. And the construction is obvious.

It was answered also by Messrs. *Eyres*, *Gawthorp*, *Kay*, and *Nesbit*.

20. Qu. (94) *Answered by Mr. Whitley.*



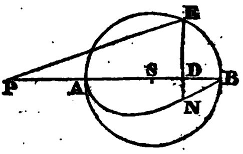
Divide AB in D so that $AD : DB :: q : p$; and BC in E so that $BE : EC :: n : q$; then D, E, will be given points. Put $p + q = m$, $q + n = a$, and the given space $= S$; by *Prop.*

2. Dr. *Stewart's* General Theorems, $p \times AP^2 + q \times PB^2 = m.(AD.DB + PD^2) = n \times CP^2 - S$; hence $n \times cp^2 - m \times PD^2 = m.AD.DB + S =$ a given space; and because D, C, are given points, therefore *Prop.* 4, lib. ii. of *Apollonius* de Locis Planis, restored by Dr. Simson, the locus of the point P is a given circle.

Again, since $n \times CP^2 - S = p \times AP^2 - q \times BP^2$, we have $p \times AP^2 + S = q \times BP^2 + n \times CP^2 = a.(BE.EC + EP^2)$ by Dr. *Stewart*, as above: hence $p \times AP^2 - a \times EP^2 = a.BE.Ec - S =$ a given space; and because A, E, are given points, the locus of the same point P is another given circle, per *Appollonius*, as above. The intersection of these two given circles will, therefore, determine the point P, as required.

Very good solutions were sent by Messrs. *Harvey, Hine, Kay, Maffett, Nesbit, Rylando,* and *Winward.*

21. Qu. (95) *Answered by Rylando and Mr. Whitley.*



Put $PB = a$, $PA = b$, $PS = c$, $AS = SB = r$, $DB = x$, and $DN = y$; then $PD = a - x$, and by the circle $DE^2 = 2rx - x^2$, and Eu. 47,1 $PE = \sqrt{(PD^2 + DE^2)} = \sqrt{\left((a-x)^2 + 2rx - x^2\right)} = \sqrt{\left(a^2 - 2x(a-r)\right)} = \sqrt{(a^2 - 2cx)}$; hence $DN = \frac{DE^2 \times PS}{PE} = \frac{(2rx - x^2) \times c}{\sqrt{a^2 - 2cx}}$ is the equation of the curve.

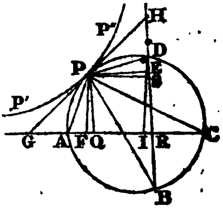
Whence it appears that the locus of the point N is a line of the fourth order which cuts AB in the points A, B; for y vanishes both when $x = o$, and $x = 2r$, as it ought to do.

The fluxion of the area is $y\dot{x} = \frac{(2rx - x^2)c\dot{x}}{\sqrt{a^2 - 2cx}}$. To find the fluent, put $a^2 = 2ch$, and $\sqrt{2ch - 2cx} = 2cz$; then $x = h - 2cz^2$, $\dot{x} = -4cz\dot{z}$; hence, by substitution, we have $(2rx - x^2).c\dot{x} \div \sqrt{(a^2 - 2cx)} = (2ch^2 - 4rhc)\dot{z} + (8rc^2 - 8hc^2)z^2\dot{z} + 8c^3z^4\dot{z}$;

and the correct fluent $= (2ch^2 - 4rhc) . \left(z - \frac{a}{2c}\right)$ $+ (8rc^2 - 8hc^2) . \left(\frac{z^3}{3} - \frac{a^3}{24c^3}\right), + \frac{8}{5} c^3 z^5 - \frac{a^5}{20c^2} =$ area B N D; therefore the whole area B N A is $=$ $(h^2 - 2rh) . (b - a) + \frac{(r - h) . (b^3 - a^3)}{3c} + \frac{b^5 - a^5}{20c^2}$ as required.

And nearly as above were the solutions by Messrs. *Butterworth, Eyres, Gawthorp, Kay,* and *Nesbit.*

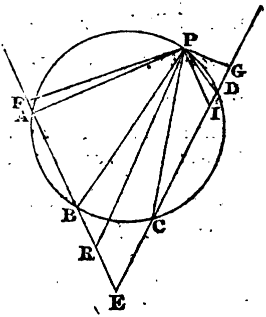
22. QU. (96) *Answered by Messrs. Jones and Whitley.*



ANALYSIS. Let A, B, C, D, be the four given points in the circumference of the given circle P A B C D, and suppose that the point P is found, so, that the product P A × P B × P C × P D may be equal to a given space, or a maximum. Draw A C, B D intersecting in R, P F, D I perp. and P S parallel to A C; draw also P E perp. and P Q parallel to B D. Then putting d for the diameter of the given circle, we have, by a known theorem, P A × P C $= d \times$ P F, and P B × P D $= d \times$ P E; hence the given product P A . P B . P C . P D = P F . P E . d^2; consequently, since d^2 is given, the rect. P F . P E is given. But by similar Δs, D I : D R :: P F : P Q :: P F × P E : P Q × P E. Now D I, D R, and the rect. P F . P E are given; therefore the rect. P Q × P E, or the parallelogram P Q R S is given; and thus it appears that the locus of the point P is a given hyperbola, of which R A, R D are the assymptotes: its intersection, therefore, with the given circle, will determine the point P required. The product will evidently be a maximum when the hyperbola touches the circle at P; in which case, if the tangent at P meet the assymptotes in G, H, then P G = P H. To determine the point P; let tangents be drawn to the circle, and terminated by the assymptotes, let them be bisected in the points P', P'', &c. then, through the points of bisection, draw the curve

$P'PP''$; which will evidently touch the circle in the point P as required.

Again, by Messrs. Butterworth and Kay.



Analysis. Let A, B, C, D be the given points, and suppose P the required one; join AP, BP, CP, and DP; also join AB and DC, and continue them to meet in E, and from P demit PF and PG, perp. to AB, and DC in F and G, and draw PK and PI respectively parallel to ED and EA, to meet EA and ED in K and I. Then, by the question, AP.BP.CP.DP is given; but $AP . BP = PF$ by the diameter of the circle, and $CP . DP = PG$ by the diameter of the circle; but the diameter of the circle is given, therefore $PF . PG$ is given; but the ratio of $PG : PI$ is given, therefore PF, PI = the parallelogram KEIP is given. Hence, it appears, by *Prop.* 75, p. 135, *Emerson's Conics*, that the locus of P is an hyperbola; if, therefore, with the assymptotes EA, ED, and power equal to the given parallelogram KEIP, an hyperbola be described, it will cut the circle in two points, either of which may be taken; when the hyperbola only touches the circle, then there will be but one point, and the parallelogram KEIP will be a maximum, and, consequently, AP, BP . CP . DP will be a maximum, beyond which the problem becomes impossible.

This question was answered also by Messrs. *Gawthorp*, *Nesbit*, and *Rylando*.

Both the answers to question 58 are right, it admits of two solutions; Mr. Gawthorp's name was omitted, by mistake, among the answers to questions 61 and 69.

Mr. Arthur Hirst's letter, containing excellent solutions to a great number of the questions, did not come to hand till the whole was copied and ready for the press.

*Mr. Whitley is requested to send for any book, the price of which does not exceed half-a-guinea.

Mr. Nesbit observes that Mr. Baines has made a wrong reference in page 324, as the 2d vol. of Hutton's Course does not treat of the strength of timber.

NEW MATHEMATICAL QUESTIONS

TO BE ANSWERED IN NO. X.

1. Qu. (117) *By Mr. J. Cattrall, Fifer 2nd R. L. Militia, Plymouth.*

A cistern has 4 cocks, A, B, C, D; now A, B, and C, when open, will empty it in 12 hours; A, B, and D in 15 hours; A, C, and D in 13 hours; and B, C, and D in 16 hours; in how long time will they empty it when all 4 are open together, and in what time would each empty it seperately?

2. Qu. (118) *By Mr. W. Bruster, Donington.*

A wall 9 feet high, and 18 inches thick, surrounds an elliptical fish-pond, whose transverse and conjugate axes are as 4 to 3; and the content of the pond, to the depth of 1 inch, is equal to the solid content of the wall; required the dimensions of the pond?

3. Qu. (119) *By Mr. A. Nesbit, Farnley Academy.*

If the transverse diameter of an ellipse be 50, and its conjugate 40, what will be the area of the greatest trapezoid that can be inscribed in the semi-ellipse?

4. Qu. (120) *By the same Gentleman.*

If the conjugate axe of a prolate spheroid be to its transverse as 4 to 5, and its solidity 41888; what will be the content of the greatest cylinder that can be cut out of the semi-spheroid?

5. Qu. (121) *By Mr. E. S. Eyres, Liverpool.*

Find the value of a in the series $\left((a^2-1)^2-1\right)+\left((a^2-2)^2-2\right)+\left((a^2-3)^2-3\right)+$, &c. such, that its sum to n terms may be a square.

6. Qu. (122) *By Mr. J. Brewer, Private 2nd R. L. Militia.*

The height of an inaccessible object is equal to the distance between any two stations taken in the same right line, divided by the difference between the natural co-tangents of the angles subtended by the object at these stations; required the demonstration.

7. Qu. (123) *By Mr. J. Baines, Reading Academy.*

Given, the 4 sides of a trapezium, to determine the radius of its circumscribing circle, when the sum of any two opposite angles is equal to two right angles.

8. Qu. (124) *By the same Gentleman.*

In what latitude will the sun rise one hour sooner on the 10th of July, than on the 20th of August?

9. Qu. (125) *By Mr. R. Maffett, Plymouth.*

A cutter observed a ship bearing due south, distant 35 miles, and they both sailed away for a port lying between the south and west, at which they arrived at the same instant, and found that their distances run included an angle at the port of 16° 15′ 36″, and that the difference of the ship's latitude, was to the distance run by the cutter, as 9 to 20; required their difference of latitude, departure, and distance run.

10. Qu. (126) *By Mr. B. Brooke, Headingley Academy, Leeds.*

Find the thickness of a spherical shell of ebony, whose diameter is 18 inches, such that it may sink, in sea water, to the depth of 6 inches.

11. Qu. (127) *By Agriculturis, Cambridge.*

Describe a square geometrically, so that its diagonal may exceed its side by a given line.

12. Qu. (127) *By the same Gentleman.*

Draw a series of lines which shall represent the numbers 1, $\sqrt{2}$, $\sqrt{3}$, $\sqrt{4}$, $\sqrt{5}$, &c.

13. Qu. (128) *By J. F. communicated by Rylando.*

Given, the position and diameter of the dial-plate of a clock, whose hand moves uniformly round its circumference;—I say another circular dial-plate, whose centre and diameter are different, may be so placed, that the same hand, produced if necessary, shall uniformly pass over each circumference, tracing out through the whole course of its revolution, equal lengths of arc in each in equal times; required the demonstration.

14. Qu. (129) *By Hurlothrumbo Minor, of the West.*

In A B, A C, given by position, is a given point E; it is required to describe a circle touching A C in F, and cutting F E produced in D, so that D E × E F may be equal to a given space, or that D E may have to E F a given ratio.

15. Qu. (130) *By Mr. Rt. Maar.*

A is 25 years of age, and B 50; what is the probability that B shall survive A?

16. Qu. (131) *By Lemuel Syray.*

Find four numbers, such, that their sum being added to, or subtracted from, the square of each particular number, the sums and differences thence arising may be all squares.

17. Qu. (132) *By Mr. J. Butterworth, Haggate, near Oldham.*

If the ends of a string, 20 inches long, be fastened to the ends of a uniform rod whose length is 12 inches, and weight 4lbs. be suspended by the middle of the string; and if a ring, of 8 inches diameter within, and weight 2lbs. be put upon the double string, to find the position of the ring, &c. when the system is in equilibrio.

18. Qu. (133) *By the same Gentleman.*

Given, the base and perpendicular, to construct the plane triangle when one of the angles at the base is double the other.

19. Qu. (134) *By Mr. J. Winward, Plymouth.*

Given, the line bisecting the vertical angle, and the ratio of the segments of the base made by this line, to construct the plane triangle when the sum or difference of the perpendiculars from the ends of the base on this bisecting line is of a given length.

20. Qu. (135) *By Mr. J. Kay, Rayton, near Oldham.*

The distance between the centres of an opaque and a luminous spherical body is given, and the bodies begin to generate from nothing at the same time, and at each succeeding instant their magnitudes have a given ratio; (the opaque body being the greater) to determine, geometrically, the great circle of the opaque body where the enlightened part of its surface is a maximum.

⁂ Whoever sends the greatest number of true solutions to the preceding questions, will be entitled to a book, price 10*s*. 6*d*.

N. B. In future, no question will be inserted that is not accompanied with its answer, except some particular reason is assigned.

Messrs. Editors,

The following paper is an attempt towards generalizing the prize question of the Gentleman's Diary for 1809; should it be deemed worthy a place in the Enquirer, its insertion would oblige,

Your's, &c.

Plymouth, Sept. 9, 1812. GEORGE HARVEY, JUNR.

GENERAL PROBLEM.

Having any number of circles given in magnitude and position, to determine geometrically *a point P in a line of any kind, given also by position, from which tangents PA, PB, PC, &c. being drawn to these circles,* $m \cdot PA^2 \pm n \cdot PB^2 \pm p \cdot PC^2 \pm$, *&c. may be equal to a given space; the signs ± being allowed to operate in any manner whatever; and also that these tangents may obtain a given ratio; and to point out the limits of possibility.*

SOLUTION.

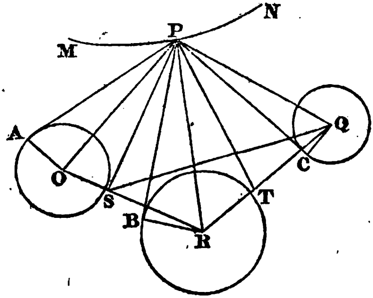
Case I. Let it be required to determine a point P in the line MN, sich, that $m \cdot PA^2 + n \cdot PB^2 + p \cdot PC^2 +$, &c. may be equal to a given space.

Join the points O P, R P, and Q P, as also A O, B R, and C Q. Then, $m \, . \, PA^2 = m \, . \, OP^2 - m \, . \, OA^2$,
and, $n \, . \, PB^2 = n \, . \, PR^2 - n \, . \, BR^2$;
and, $p \, . \, PC^2 = p \, . \, PQ^2 - p \, . \, CQ^2$, therefore $m \, . \, OP^2 + n \, . \, PR^2 + p \, . \, PQ^2 - m \, . \, OA^2 - n \, . \, BR^2 . - p \, . \, CQ^2$, or $m \, . \, OP^2 + n \, . \, PR^2 + p \, . \, PQ^2 +$, &c. is equal to a given space.

Join O R, and take $SR = \frac{m}{n} OS$, and join PS; then, (*Leslie's Geometrical Analysis*, p. 374) $m . OP^2 + n . PR^2 = n . OR . RS + (m + n) PS^2$, and, therefore,
$n . OR . RS + (m + n) PS^2 + p . PQ^2$, or,
$(m + n) PS^2 + p . PQ^2 +$, &c. is equal to a given space; and hence the locus of the point P is a given circle, (*Prop.* 4, *lib.* ii. *Apollonius de Locis Planis, restored by Dr. Simson*) and describing which, as there directed, will intersect the line M N in the required point.

Case II. Let it be required to determine a point P such, that $m \, . \, PA^2 - n \, . \, PB^2 - p . CP^2 -$, &c. may be equal to a given space.

Here $m \, . \, PA^2 = n \, . \, OP^2 - m \, . \, OA^2$,
and $- n \, . \, PB^2 = - n \, . \, PR^2 + n \, . \, BR^2$,
and $- p \, . \, PC^2 = - p \, . \, PQ^2 + p \, . \, OQ^2$, therefore $m \, . \, OP^2 - n \, . \, PR^2 - p \, . \, PQ^2 - m \, . \, OA^2 + n \, . \, BR^2 + p \, . \, OQ^2$ or $n \, . \, PR^2 + p \, . \, PQ^2 - m \, . \, OP^2 +$, &c. is equal to a given space.



Join QR, and take $QT = \frac{n}{p} RT$; also join FP, then (*Leslie ibid.*) $n \cdot PR^2 + p \cdot PQ^2 = p \cdot RQ \cdot TQ + (n+p) TP^2$, and therefore $p \cdot RQ \cdot TQ + (n+p) TP^2 - m \cdot OP^2 +$, &c. Or $(n+p) TP^2 - m \cdot OP^2 +$, &c. is equal to a given space; and hence the locus of the point P is a given circle, (*Apollonius, ibid.*) describing which, as there directed, will intersect MN, in the required point.

Case III. Let $AP : PB : PC : \&c. :: m : n : p : \&c$; then from this we deduce $n \cdot AP = m \cdot PB$, and $p \cdot PB = n \cdot PC$; or $n^2 \cdot AP^2 = m^2 \cdot PB^2$, and $p^2 \cdot PB^2 = n^2 \cdot PC^2$; and $m^2 \cdot PB^2 + n^2 \cdot PC^2 = n^2 \cdot AP^2 + p^2 \cdot PB^2$; but $m^2 \cdot PB^2 = m^2 \cdot PR^2 - m^2 \cdot BR^2$, and $n^2 \cdot PC^2 = n^2 \cdot PQ^2 - n^2 \cdot CQ^2$ and $n^2 \cdot AP^2 = n^2 \cdot OP^2 - n^2 \cdot OA^2$, and $p^2 \cdot PB^2 = p^2\, PR^2 - p^2 \cdot BR^2$; hence

$$m^2 \cdot PR^2 + n^2 \cdot PQ^2 - m^2 \cdot BR^2 - n^2 \cdot CQ^2 = n^2 \cdot OP^2 + p^2 \cdot PR^2 - n^2 \cdot OA^2 - p^2 \cdot BR^2,$$

and $(m^2 - p^2)\, PR^2 + n^2 \cdot PQ^2 - n^2 \cdot OP^2$ is given.

Join RQ, and take $TQ = \left(\frac{m^2 - p^2}{n^2}\right) RT$; join TP, then (*Leslie, ibid.*) $(m^2 - p^2)\, PR^2 + n^2 \cdot PQ^2 = n^2 \cdot RQ \cdot TQ + (m^2 + n^2 - p^2)\, TP^2$, and, therefore, $n^2 \cdot RQ \cdot TQ + (m^2 + n^2 - p^2)\, TP^2 - n^2 \cdot OP^2$ is given; or $(m^2 + n^2 - p^2)\, TP^2 - n^2 \cdot OP^2$ is equal to a given space; and hence, as before, the locus of the point P is a given circle, (*Apollonius, ibid.*) which locus described, will intersect MN, in the required point P.

These cases are sufficient to explain the mode by which the Problem may be resolved in its most general form;—for it is evident, that by repeated applications of this principle, we may always reduce each particular case through the before-mentioned Problem of Apollonius.

With respect to the limits of possibility in the case of a maximum or a minimum, we have only to describe to a given centre, a circle, to touch the curve, which is given in position.

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